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ABSTRACT

The Task Force on Women, Minorities, and the Handicapped in Science and Technology was established by the U.S. Congress in Public Law 99-383 with the purpose of developing a long-range plan for broadening participation in science and engineering. Public hearings were held in Albuquerque (New Mexico), Atlanta (Georgia), Baltimore (Maryland), Boston (Massachusetts), Chicago (Illinois), Kansas City (Missouri), and Los Angeles (California) between Fall 1987 and Spring 1988. The final report of the task force was produced in December, 1989. This document is the verbatim transcript of the meeting. Co-Chairs Dr. Ann Reynolds and Mr. Jaime Oaxaca presided over the meeting. Discussions included: (1) An opening statement; (2) policy issues including the federal role in precollege education (Dr. Shirley Malcom), emphasis on specific actions for federal agencies (Dr. Mary Cutter), actions for industry (Dr. Harriet Jenkins), and a statement on racism, sexism, and discrimination against persons with disabilities (Dr. Alan Clive); and (3) a discussion on the style and format of the document to be produced by the subcommittee. (CW)

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ED317388

# TASK FORCE ON WOMEN, MINORITIES, AND THE HANDICAPPED IN SCIENCE AND TECHNOLOGY

## EXECUTIVE SESSION

REPORT OF PROCEEDINGS of a meeting of the Subcommittee Task Force on Women, Minorities and the Handicapped in Science and Technology held on the 24th day of May, 1988, in Washington, D.C., and presided over by MR. JAIME OAXACA and DR. ANN REYNOLDS, CO-CHAIRS.

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Kansas City, MO

Dr. Ann Reynolds, Chancellor
California State University System
Long Beach, CA

Members Present

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Delaware State College
Dover, DE

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Cleveland, OH

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DR. REYNOLDS: We now have a draft that all of you have had, thanks to the devoted work of Deborah Shafley [PHONETIC] over in the blue suit by the slant-wise pillar, and Frank Calea [PHONETIC], and Betty Vetter aided them as well, who is sitting back there in the corner.

So if there are specific needs we have with the draft, they will be there to take note of them.

We thought we would begin with a discussion of policy issues.

Incidentally, I should have indicated if there is anyone that needs sign language for the hearing impaired here today, we do have people who can sign. Do we have anyone who needs that? I don't see any response. Thank you.

First, "Federal Role in Precollege Education." We have a recommendation from Shirley Malcom. I saw--where's Shirley, where did you go and hide?

MS. KEMNITZER: She's at the end here.

DR. REYNOLDS: Shirley, do you want to indicate what you have in mind there?

DR. MALCOM: Yes, can everyone hear me? In reviewing the draft, I was looking particularly on the issues that related to precollege math, science, and technology education.

It is quite clear that we had the right kinds of goals and the right kinds of statements, but the--we were missing actions that could in fact get to those goals.

There have been a lot of reports that have come out

recently, and more are coming out every day that speak in glowing kinds of terms about why you must do this, about the importance of this, about the imperative of one who has increased the participation of one or another of these groups in education or in science and technology education, but they also suffer from the same condition, and that is they speak very generally and glowing about the things that must happen, but not in terms of the things that will get us there.

And ultimately offer an alternative for us, and that is that, we actually come out with some statements about what in fact can get us there, that even more proactive and more direct in terms of what we offer as a Task Force to the solution of this national problem.

I think that we must first start by saying that precollege science and math and technology education must, in fact, be a national issue--a national issue.

And I think that we have--the reasons that are set up for us are very clear, that in fact the need for these people is national--need, to ensure a supply of scientists, engineers and technicians.

Secondly is the [INAUDIBLE] is continuous, from grade school through grad school, as the title of the OTA report points out, said [INAUDIBLE], that early intervention is critical in effecting the choices of courses, the achievement in courses, the attitudes about science, math, and technology education, career orientation, and out-of-school experience.

Research supports this. All of these particular elements that earlier is better than later, and that the greatest losses from the pipeline, especially from minorities and especially for disabled kids is what they do not get, what doesn't happen to them, is because of what does not happen to them through the precollege years.

In terms of precollege education goals, I think that we must recognize that while there is a national issue, that these must be carried out largely at state and local levels, and that we are not talking about taking anybody's job away from them, but that there must be a more proactive and inclusive role for all of the partners, and these are from the private as well as on the public sector.

Now, a question that I think is missing from this is, is there an appropriate federal role? And if so, what is it?

Now we can talk generally about what has been and what is an appropriate federal role in precollege education. And I want to delineate those items that have through precedent or legislation been agreed upon as federal roles in education.

First is research and development.

Second is statistics.

Third is support for models, demonstrations, and [INAUDIBLE].

Fourth is geographic distribution, or geographic kinds of equity.

And the last is equity itself. For example, as manifested through the support of Chapter I funds, education for the handicapped funds, and the like.

There is an acknowledged role from the federal government in science education, which is very different from other kinds of education. That is, language that is contained within the federal laws, the public laws that speaks to the need for adequate science education and a federal role in science education.

Now the question is, how do we actually fix the problems that are out there?

And I'm going to propose these as action-oriented items, in addition to all of the things that we say that the state and the local government and the private sector and industry and everybody else has to do as part of this [INAUDIBLE], that there in fact be a role for the federal government in its [INAUDIBLE], a proactive role.

The point is, first of all and foremost, by leadership, and I think that the next look is that we must look at really two sets of issues, one is the federal government's role in helping to fix the system.

And second is the federal government's role in providing experiences until the system gets fixed.

Now in proposing the first one--fixing the system--there are some specific kinds of actions here that I'm proposing.

First of all, to target our major urban centers, a systemwide assessment that includes, that involves business, community organizations, higher education, parents, along with the schools--that there is a federal role in terms of helping to support this systemwide assessment, that there be a competitive grants program for implementation of what flows from this assessment.

Now the first question is, why target your urban centers? I think a number of reports have said--first of all, that they have been getting, they are some of the most bankrupt systems in terms of the quality of science, math, and technology education as being provided to the students.

Second is that their resources--on the other hand, these urban centers are resource-rich, in terms of what can be mobilized to help deal with the problem.

And the other issue, that if you target your major urban centers, you in fact reach around 60 percent of Black and Hispanic kids that you are trying to in fact--that are part of the most resistant issues to change.

So that there is the proposal for the competitive grants program, where the monies are significant enough to in fact help to move that system.

I think that another issue, looking again at these urban centers, is that because many of them cannot be desegrated, they do not qualify for magnet school monies.

And that one alternative is also to support interest-

based magnet schools at middle and high school levels in our open centers.

The research says that magnet programs have been successful in moving these student, particularly minority students, into science-based careers.

But that, in fact, magnets were based upon interest as opposed to magnets that are really special schools in which you must test in.

The next item that I would propose is that this question of providing technical assistance. How do we get help to those particular centers?

One model, which is an attractive model, is to draw upon the cooperative extension model of agriculture and place technical, make technical assistance available in these centers, urban centers, not only for use by the schools in terms of addressing their math, science, technology, education issues, but also to assist those out of school at organizations, groups, what have you, that are trying to move more kids into math, science, and technical careers.

We--I think we mean also support teachers efforts to improve their own working conditions and professionalize themselves. OK, this is the next item for--next proposal, dealing with the question of teacher effectiveness.

The job of getting the national board for professional teacher standards up and running will be a difficult one because of the amount of monies that are involved

in the R&D part of the [INAUDIBLE] teaching assessment, that it really addresses what teachers need to know and be able to do in a classroom setting, so that they can be perfected.

And the efforts by the teachers to professionalize and upgrade themselves would seem to be something that great investment of federal dollars would make a lot of sense.

The other place where investment of federal dollars would make a lot of sense is in terms of teacher in-service. Now this is already being provided on a modest scale out of National Science Foundation support.

But the issue here is teacher in-service that stresses equity, along with content and competence.

Right now, most teacher in-service in science, math, and technology occasionally is directed at the providing people with new knowledge, and not so much necessarily an emphasis on pedagogical skills and not necessarily on the research that says that students learn, all students learn [INAUDIBLE].

So that that mechanisms to enhance teacher effectiveness will also seem to be appropriate things for the federal government, an appropriate role for the federal government to assume in this whole national effort to deal with the [INAUDIBLE] precollege level.

Now we talk about providing experiences. The sponsorship of special programs which are currently being provided, such as by our national labs, is some programs, the Saturday programs and these kinds of things are being offered.

I think that this should be supported and underscored, and the fact that there is, that the laboratory and industrial contractors and anybody else who provides in-service should continue and expand this service.

Tutoring, such as through community service [INAUDIBLE] and the increasing move toward higher education solutions to go to alternative kinds of modes for financing education through community service and education credits in essence being gained through that kind of sponsorship, in the same way--through that kind of service in the same way that the military service gives you certain numbers of credits toward supporting your education.

And that a certain amount of the time of these young people will in fact go toward tutoring and working with young people, with smaller kids in our high schools and middle schools.

And I think that finally the question of supporting the technology that disabled students might need in their education, and providing the technology, not only in school, but also loaner programs that can provide the same technology to [INAUDIBLE] students when they go home and out of school settings.

Now this has been a fairly long list, and I don't like to talk that much, and I had hoped to have an overhead here so that you can see on a kind of a point-by-point basis what we are talking about.

I hope that the sense is here not to say that the federal government should do it all, but that it must be a partner in addressing the issue of precollege science, math, and technology education for all students because it is a national problem and because the leaks in the pipeline here are really the ones that are killing us, in terms of expanding our pool at [INAUDIBLE].

We can't get the people into higher education if they don't get out of elementary and high school with the right kinds of education and while we can support the notion that they need four years of science, that they need four years of mathematics, I think that we also need to support the notion that there is a role, an active role for everyone to play in providing the students with the kinds of support that they are going to need.

And by that, I don't just mean money. I mean the kind of tutoring, assistance to their teachers, and what have you, so that they can be successful.

And I think that to do less than this really is to pay lip service to an extremely critical national problem.

DR. REYNOLDS: Thank you, Dr. Malcom. As you spoke, I kind of ticked off in my mind where the report addresses your comments, and I think it has most of them in there.

I would urge you, if there are some specific areas in the report that you see a way another sentence or a heightened word or something like that to address those issues, that those

be communicated to Dr. Calea, to Deborah.

And you know this, I think, better than anyone, was that area, too, that Dr. Malcom referred to that we have missed.

[INAUDIBLE COMMENT]

DR. REYNOLDS: The special competitive grants program--is there a way to include that? How do the rest of you feel about that? OK, Nina.

MS. WINKLER: I'm not quite sure what problem that is solving. I know in the city of Chicago is probably one of the best-known current ongoing assessments of their whole system.

That is something that was initiated in the city of Chicago because of very strong political pressures within the city. It was a process by which representatives of different parts of the community came together, and they pushed for reform, and we don't know the outcome of that process completely because it is still going on.

To me, that says that when an urban center gets the political will to do something about its awful schools, they don't stop because there is no--and federal grants to do this or to implement it isn't the problem.

It generally is the political will to do it.

I guess I see a similar thread through a number of these, that there is a strong desire to do something about a very real problem that we have all seen, which is that there are some pretty terrible school systems in this country. They

don't give kids a good education, particularly in math and science, but generally throughout.

When we look for what can we do, what can we do, I think sometimes we're stretching, and I think the systemwide assessments funded by the federal government--I think that's what the federal role would be here--the competitive grants [INAUDIBLE] flows from the assessment.

What probably needs to flow from an assessment like that is a general improvement of the school system, not buying a few of this or a few of that or some other limited thing.

I think it is pretty clear that if a city school system is in trouble, it is the whole system that's in trouble. I have a lot of problems with that, those, I think.

It's kind of a symptom of a number of problems we have in this report, in that we have a lot of solutions, and I'm not real sure what problem it is that they are trying to solve, to identify, other than the general problem of math and science education, or math and science, or the math and science pipeline not working.

I think solutions should be targeted towards specifically identifying problems, and I haven't seen anyone show in this Task Force that cities are unable to plan for improving their school system because they don't have enough money to do it with.

DR. REYNOLDS: I could give you an awful lot of data, in the Oakland School System and the L.A. Unified School

District, that there is not enough money to implement programs we know will work, and I will be glad to send you those data.

I mean truly, there have been developed, for example, in conjunction with our institution, as absolutely marvelous intervention program in junior high, using our own student teachers, and it works.

If you put the student teachers out there in the school under the supervision of a teacher, literally they give more time to a youngster that's showing a tendency to drop out, you can keep them in school.

And we have used control schools and experimental schools. If we had enough dollars to expand it, we could cut down on the dropout program further.

Is that the kind of thing you mean? Because this has been tested and it works. I don't know what else I can say.

MS. WINKLER: Well, I guess I didn't see, from what Shirley was describing, specific things like that. I saw a general competitive grant just to get money, and [INAUDIBLE].

DR. REYNOLDS: Let me go to Mr. Oaxaca.

DR. MALCOM: [INAUDIBLE] That's not the intent.

MR. OAXACA: I think we have a grand opportunity. We have worked hard for X number of months. We have gone throughout the country. I would hope that today's meeting is going to be one of--as opposed to "I don't see how that can work," I would hope that the inputs from people would be, "Here is my solution to the problem," as opposed to "I don't like

your solution."

I would hope that it would be a report that is not going to be like the reports that have come out previously from all the different folks that don't get into the realm of being bold and being innovative and at least having it become a subject for dialogue in the nation.

The fundamental issue is that we don't have kids coming out of high school that are qualified to make it through the pass to get the B.S., and once they get the B.S., the jewels that do make it through, don't have the money to carry them through for the M.S. and the Ph.D.

Every single report--we have the one here that is being done by the Western states on minority/majority, and the fundamental issues are the same.

And if you look at, in the Southwest, in Arizona, California, Colorado, New Mexico, and Texas, 40 percent of the kids, in zero to 14, under 14 ages, it is 40 percent of the population.

It is a given that that you are not going to change. Women, minorities, and the handicapped are going to be 85 percent of the action.

It talks here about providing core curriculum at the elementary and secondary levels. It challenges all the students and prepares them for the next stages of their education.

If you don't, you are going to have an

underrepresented set of folks, and that is the only folks you are dealing with. So the nation will drop accordingly.

It is a fundamental problem that we don't have the luxury in my mind to go down the path with the report that looks at the glass half empty.

We must be proactive in my mind. I'm a businessman, maybe I don't understand the politics of it, and all the sensitivities of upsetting people, but I do know that our nation has a problem and we've got to fix it.

Now we are professionals and we are tasked to do that, and we have a grand opportunity to come up with a report, and it is an interim report, so we have an opportunity to have it be a living document that we can fix along the way when we get feedback from all the folks we go talk to.

And it's right before an election. It is going to be a close election. They are all going to be trying to romance the system, and so all the mechanisms--it's like all the planets are, you know, are in line. [laughter]

[INAUDIBLE COMMENT]

MR. OAXACA: I said it on purpose, a little levity. The thing that I would hope we will do as we go around all these things is to come up with positive suggestions to a report that is almost there, that we gotta get off the dime and go with it.

You are never going to have a perfect report, and we'll go on. Thank you.

DR. REYNOLDS: That's what I would like to concentrate on. The--I think this whole group has been marvelous. We have met in a variety of locations. We've had lots of good chances to talk, both privately, in small groups, in a large group and hear lots of testimony.

But, hard as it is, and I'm like all of you, when you finally have to concentrate on that draft, we do today have to concentrate on the draft, and I am really going to kind of keep after you in that respect.

So if comments are not pertinent to what needs to be done with the draft, I am going to have to politely ask you to focus on that and move on.

I have Mr. Danek, back to Ms. Malcom, Ms. Joseph, and Ms. Jenkins. Anybody else that wants to speak? OK, Joe.

DR. DANEK: I would simply like to comment that I don't think it's just the money that's necessary. I mean there are a lot of--my experience is not with cities, but more with states--there are a lot of competing interest groups in particular states and particular organizations, in which there is no outside group which is validating some of the things that people are trying to do.

And I think that a comprehensive grants program could provide the process, which would be just as important as the money, to help get things organized and to get very dedicated people together into a planning process and organized toward a realistic national goal.

And I think the process that would occur in the planning grant and the comprehensive grants is just as important as the money.

I don't know how, whether or not the UDAG program is successful.

DR. REYNOLDS: What's that again, Joe?

DR. DANEK: It is called the Urban Development Action Grants. I know that I can go into many major cities in this country and I can see major changes that have occurred as a consequence of those comprehensive grants, in which people got together and used the outside money as a catalyst, not just as a bank, to make changes.

And every major city in this country has that, and I would look to that as kind of a model for what we could do with education in our cities.

DR. REYNOLDS: Shirley, did you want to make another comment?

DR. MALCOM: I would like to make some clarifying remarks, and that is that I did not, I meant to tie the notion of assessment to the notion of competitive grant process, that you go through the process of getting together first, and thinking through what it is you're going to do as a total community.

I think that a large, in a larger sense a reason would be that if they had problems with things in the past, that the schools would go over here and decide what it was that

they wanted to do, and they did not bring the rest of the community along.

They did not bring industry along, they did not bring the higher education institutions along, the museums, the community groups, the churches, the parent groups, and what have you.

And I think that if you have the kind of, essentially to build the base for total systemwide, long-term change, and have, as Joe said, and I think this is absolutely critical, a catalytic role for the funds.

Indeed, even--you know, you don't want to design programs and think that even with the practice of matching funds, I mean that if you have a leverage, a lever, you can do it. And I think that what we have here is to try to encourage groups to be more innovative and stay systemwide in their thinking, rather than plugging a hole here or there.

One of the things that we know is that systems have a tremendous ability to absorb a model program here, one school over there, some pilot within some school, and as soon as the monies run out, all of this falls apart, which is one of the reasons that you have to think more systematically and more systemwide, more strategically about how you are going to do this.

And I think that if we can deal with the urban problems, the worst problem, the urban school problem, that we can help to point the direction for improvement in all the

schools.

DR. REYNOLDS: Thank you, Shirley. Ms. Joseph.

MS. JOSEPH: [INAUDIBLE] that there be a targeted urban program and asserting this assessment may be saying what led to a lot of that discussion [INAUDIBLE] something else.

DR. REYNOLDS: That's a good point.

MS. JOSEPH: So that's the level [INAUDIBLE] that isn't there now [INAUDIBLE] a key suggestion would be [INAUDIBLE].

DR. REYNOLDS: Deborah, did you get that? Because I think that's a good concept, that with a program, incentive grant program, that it could be efficiently targeted to the urban areas where most of the target populations are.

Harriett Jenkins.

DR. JENKINS: I was simply going to ask Shirley if she would share her transparencies with the staff and maybe black and white copies could be made for the members [INAUDIBLE]. I thought all her points were well made, and will be helpful in other kinds of things we're going to do, especially when we look into the specificity of the actions later on today.

And to give you one example, one of the things she suggested was that we support teachers' efforts to improve themselves, and maybe it is just the way in which we would alter [INAUDIBLE] workshops, counseling, and retraining [INAUDIBLE] all school staffs.

So I think in that area...

DR. REYNOLDS: I saw that, too. Frank, you know where that [INAUDIBLE] says, it should say, "All teachers should be involved in these efforts," or something of that sort.

DR. JENKINS: Encouraged...

DR. REYNOLDS: Encouraged.

DR. JENKINS: [INAUDIBLE] money provided...

DR. REYNOLDS: Participate in...

DR. JENKINS: [INAUDIBLE] to improve the educational [INAUDIBLE] and improve the processes [INAUDIBLE].

DR. REYNOLDS: Did you get? Yeah, yeah, that is so important, that they are not participatory.

MR. OAXACA: I think we want to say in the report in a way that does not give the teachers, who are the backbone of the thing, that we are not bashing them.

DR. REYNOLDS: Exactly.

MR. OAXACA: But that we recognize them as the baseline that we have to start with, and we have to start recognizing that not only do we have to recognize the need for the support of the nation, but they need the substance that goes behind it, so that they have an incentive to, indeed, put up with all the things, especially in the urban centers where in a lot of areas, like in East L.A., it's Dodge City.

DR. REYNOLDS: I happened to have lived a chunk of my life in Dodge City, and it's kind of a pleasant, quiet little

[laughter].

OK, let's move on now to item number two, Mary Clutter had a recommendation on specific federal agency actions.

DR. CLUTTER: First of all, I would like to say that I think the report reads pretty well, in fact, and so I haven't had the tremendously serious criticisms.

However, I have three suggestions to make, I think might make it more readable.

Let me tell you when I read this report--I have read it a number of times now--the first time it sort of put me to sleep, and--but it was late.

But I thought now we've been saying at hearing after hearing that this is not going to be another report that just could be thrown on the shelf to collect dust.

And as I read it, I thought, my God, that's exactly what I would do with this report. And it didn't seem to me that that's what I heard as we went around the country.

And so I thought, well, what could change this report to make people sit up and take notice?

Now, I'll get to that, but I was struck by an article that I saw in the newspaper, it was in the Post this morning, it says--it's on page one--"U.S. [INAUDIBLE] on Gains [INAUDIBLE]: Panel Finds Nation Moving Backward."

That's [INAUDIBLE] and there is an upcoming [INAUDIBLE] report. So--and every one of them says that

something is needed. There's action needed.

Well, we have the chance to suggest an action. And I see that in the report that it's kind of spotty. And so I have a couple of suggestions to make and I'll just distribute--I did this one late last night, without secretarial assistance.

MR. OAXACA: Folks will leave him a Macintosh.

DR. CLUTTER: [INAUDIBLE].

MR. OAXACA: Oh, that's why it took you so long. [laughter]

DR. CLUTTER: We all know that [INAUDIBLE] and people who can make a difference. By that I mean leaders of the agencies, the leaders in business, everywhere, will only read the executive summary.

So, I think you've got to say right up front. I think that introduction is fine in this report, but I think we've got to come up with our findings.

I really think we need a section on findings, and I have made two points there--I'm not really [INAUDIBLE] of them--but these are some general statements that really are the findings that will be, that we're finding.

And I have probably left things out. Maybe some of these are redundant.

But I think we need to say it a couple of times, and I was pretty confident [INAUDIBLE] because what we really heard was a lack of commitment in every sector, the private and the public, there was a lack of commitment to the issues that we're

addressing.

And so I think that we need to say that, and I think that one of the problems that we found is that the federal agencies have not recognized [INAUDIBLE].

And I have to say that I am from the federal government, that's what I know the best, as well as [INAUDIBLE]. But the federal agencies in all the [INAUDIBLE] and we have not had to prepare for demographic change, and they are going to profoundly affect the nature of science and technology in this country in the 21st century. I think we ought to say that.

MR. OAXACA: I agree.

DR. CLUTTER: The existing federal programs, and there are a number of them, who are directed to increasing the numbers of women, minorities, and disabled scientists and engineers, were established by Congress--not by the Executive Branch. They were established by the Congress to [INAUDIBLE] equity, not to address a national crisis.

And I think we ought to say it.

And also if we look at the total federal R&D budget, which profoundly influences what we do in science and technology in all spheres in this country, we look to see what the impact of that budget is on attraction, retention, and advancement of women, minorities, and the physically disabled, and we find that we don't know what that impact is because these programs have [INAUDIBLE] and evaluated, but most of them

have never been evaluated for effectiveness.

There are no data. If data are collected, they are not available. You just can't get at this.

So I believe in saying this, right up front in the executive summary (one person claps), and I heard Jaime Oaxaca make a presentation to the National Science Board last week, and he said these things very, very well, and Sue was there and maybe a couple of others--I know Joe wasn't there.

But I would say if we just take some of the statements you made, Jaime, and put them right up front in the report, people would sit up and take notice, at least we would get a little media attention.

OK, second, I think that the six goals that are in the executive summary are fine. They are goals that I hope we all agree with.

But I think that we need to be more specific in some areas. In some areas, there is enough specificity. But I agree with Shirley on points that she made earlier at the precollege level, I think that we ought to take each one of those goals and recommend very specific actions.

And I have suggested some for the committee that I co-chaired on federal R&D, and were our committee, the research committee. And even though I did this last, literally last night--I haven't had a chance to get together with my co-chair--I think that she will probably agree with some of the things we have in here because they were actually the actions

that we proposed earlier.

And when I typed these, and I saw they really didn't occupy that much space, I thought that half a dozen of these, these actions could fit into an executive summary, and with the goals, and identifying specific programs.

So that's pretty much all I want to say right now, but I think we should have some discussion about the actions.

DR. REYNOLDS: Mary, perhaps we could give you your days off and just let you work late at night.

I think this is very solid, how you've clearly reviewed the report and I especially like--well, I like it all--especially like, though, the way you've ordered it under goal number four, where you make the point very clearly, this sentence, that first paragraph, "Should we leverage over the next decade to develop a diverse world-class scientific work force including full participation of women, minorities, and the physically disabled?"

DR. CLUTTER: That's actually in the report.

DR. REYNOLDS: It is.

DR. CLUTTER: Yeah, just slightly reworded.

DR. REYNOLDS: Yeah, but that is the real nugget of what we are trying to do.

Now I--my memory isn't good enough right now to know if all of these actions--Frank, are all of these actions that are in here in the report?

FRANK: Most of them are, a couple [INAUDIBLE].

DR. REYNOLDS: OK, so we can incorporate the changes that Dr. Clutter has made here because I think I see people nodding and feel that they are a good way to go.

OK, let me go to the back there and then to Nina Winkler. Dr. Smith--Mr. Smith, and then Mr. Williams.

MR. SMITH: Yes, I would like to pick up on a point that had been made because I think this is important for [INAUDIBLE].

One of the things I think that we'll cover--a problem--is that the federal government has a really solid reputation for treating groups of people fairly. A lot of [INAUDIBLE] populations have worked their way through our system and [INAUDIBLE].

And I think that what that gives you is a base [INAUDIBLE].

DR. WILLIAMS: [INAUDIBLE].

DR. REYNOLDS: Thank you. Nina.

MS. WINKLER: [INAUDIBLE] solves the problem that I had in the draft, and I would like to recommend something that I think all of our reports [INAUDIBLE] on federal research and development and the process that she has laid out here, solving--addressing problems that [INAUDIBLE] research and development.

I think it is a process that is appropriate for probably all of the subjects in terms of federal concern here. [INAUDIBLE] What Mary has done here is suggest a process

whereby federal agencies can come up with sensible, well-coordinated solutions to the problems that have been identified.

And for collecting the necessary data and analyzing it within the normal way in which government agencies work and make decisions, without creating a whole new bureaucracy out of a lot of emphasis on milestones and on mainstreaming programs.

All of these things are really good points. I would like to suggest that we consider replacing the action of creating a national commission and the associated pipeline that can [INAUDIBLE] would mirror some idea about a federal coordinating committee for science, and that they would have the agencies collect the data, and that there would be within the agencies a person responsible for thinking about human resources and so forth.

I really like that [INAUDIBLE].

DR. REYNOLDS: Let's see. Stella, and then Ms. Bishop, and then Mr. Fernandez. Go ahead, Ms. Guerra.

MS. GUERRA: One of the things that I did not [INAUDIBLE] is how we will say to Congress [INAUDIBLE] a lot of agencies who are progressing. [INAUDIBLE].

And I guess I'm thinking in terms of [INAUDIBLE] agency bears responsibility for collecting the data on how women, minorities, and the handicapped are faring. [INAUDIBLE].

You're talking about equity issues. [INAUDIBLE].

DR. REYNOLDS: All right, yes.

DR. MALCOM: See, if we pool the EEOC, we get back to equity issues [INAUDIBLE].

MS. GUERRA: [INAUDIBLE].

DR. REYNOLDS: I think the [INAUDIBLE], just to get us off the dime, is that there is unanimity of feeling that we have got to have a good data collection method for movement in science and technology, or, frankly, we will never know where we started and where we got to and what still needs to be achieved.

I see the proposal here--I'm trying to read as I think--Mary, you're talking about a federal coordinating committee, what is our--national commission--some almalgamation of those two. I don't think we want to recommend two such groups, but some kind of coordinating body, both to keep track of data--keep track of programs, provide a coordinating function for this effort.

So that at times one would hope one declares a victory, that there are more doctorates being produced in physics, and they are starting to meet a national need, but what we really need are, to concentrate on now are more doctorates in immunology or something.

And do I have the concept right?--did I see the heads nodding? Yes, Ms. Bishop.

MS. BISHOP: I was going to skip that issue because as I suddenly came up with this phrase, and I was trying to

look for an earlier [INAUDIBLE] to be submitted.

The last thing we want to do is to create another finding of the federal government. And that is the last thing we want to do.

On the flip side of the coin, we also recognize that if you are trying to get the federal government to do something, we don't want the hen watching the chickens [INAUDIBLE] [laughter]

DR. REYNOLDS: Hints are all right, the male ones especially.

MR. OAXACA: You don't want the pots to be on the committee on henhouse security.

MS. BISHOP: The point is that when we talked about a national commission, and I agree with [INAUDIBLE]'s comments, we need to explain what that is, perhaps our phraseology is better.

We were talking about a group of people who are mainly now in the federal government, but also private, in academia, and [INAUDIBLE] people, the persons who advise [INAUDIBLE].

DR. REYNOLDS: Exactly. I think we all agree.

MS. BISHOP: [INAUDIBLE] This document, how well we do it, but I want to make clear that we are not talking about a brand new federal agency.

DR. REYNOLDS: Do you suppose we could, you know, like trading on brain futures or something? We could get rid

of eight and just have one new one.

Yeah, Herb Fernandez, you had a comment, and then I'll go back to Mary.

MR. FERNANDEZ: [INAUDIBLE] we need to be very specific about our recommendations. I think within every state there is a self-assessment of the educational system going on, and they are not waiting for the federal government.

But in the two big areas of eighth and twelfth and the R&D which leads to more programs, I think every state is waiting for leadership in some kind of--dollar as a leverage to get these things going.

But let's not fool ourselves. The states are not waiting around for the federal government to solve their problems. And we had a pretty good [INAUDIBLE], I think, we got a new thing going with support in the most specific [INAUDIBLE].

DR. REYNOLDS: I agree. I think that's true. I do remind you all of something I said to this group when we first began, though. There are a lot of us sitting here who are here--I went ahead and did a doctorate in the sciences because federal dollars were available for NSF fellowships.

And I had always felt that they had forgotten after Sputnik to restrict them to men. Nobody remembered, and it was the first time there was a major movement of women into the sciences because we got those fellowships. You probably had them, too, didn't you, Mary?

DR. CLUTTER: Yes, I offer to say that I never paid one penny for my education, and it's absolutely true.

DR. REYNOLDS: Yeah.

DR. CLUTTER: I had fellowships, all...

DR. REYNOLDS: All the way through. And something there that is not an unimportant point. That creates in one a feeling of real indebtedness, in my case, to the National Science Foundation--and to the nation.

One always feels obligated when one is asked to do something altruistically or serve on something like this commission, or go make a speech to high school girls going on and things like that.

When one is--have that kind of support, there is a lifelong feeling of a need to pay back, and that should never be forgotten.

Stella.

MS. GUERRA: My real concern is that if we were to establish a new body to [INAUDIBLE] systematically, I feel that the [INAUDIBLE] recommendations have to be somewhat specific, although [INAUDIBLE].

DR. REYNOLDS: I agree with that, although I would be the first to point out as a scientist, in the years working on the National Center for Health Statistics, there were early arguments when that was set up about the broadness of the data.

How could anyone possibly want these data? What use will it possibly serve?

And as the years go by, it's just astounding how helpful broad data are. So I support what you're saying, but within limits.

I think you really need to get as many parameters as possible, measure, and I think Betty would nod and agree with me, because as the years go by there are all kinds of things that didn't seem important to begin with, that you really go for the broad stream.

MS. GUERRA: I agree, but to start off we have to know that this data will be used to establish public policy or to be able to [INAUDIBLE], or to issue a final report that monitors the state of the nation.

DR. REYNOLDS: Yeah, I think some of that is inherent in the report, that...

MS. GUERRA: All of the above.

DR. REYNOLDS: All of the above, yeah. OK, I'd like, I think we've received Doctor...

DR. NOONAN: Well, let me say something, as the person that will probably collect this data. If--and I'll tell you the mechanisms for which we would like to collect, we would like to collect it as far as a special analysis on research and development data that we collect, and collect the rest of the R&D data environment [INAUDIBLE] OMB Circular 811, which is an annual data submission that the agencies have to put together.

Last year we put in a [INAUDIBLE] exhibit to try to respond to rational demand for data on technology transfer, and

[INAUDIBLE] exhibit, and as part of the exhibit, it should get out to all the agencies, and we got back the grand total of five responses.

And part of that is because the data is extremely difficult to collect. And we made it as specific as we possibly could.

And it, again, was in response to the fact that we were required by the Technology Transfer Act of 1986 to provide this data as part of the annual budget submission. We would not do that [INAUDIBLE].

I will type it in two specific ones, because I have to justify my [INAUDIBLE], make change in Circular 811 to go out with new data collection, I am going to be under some scrutiny as to why I want the data and what it is going to be used for.

If you get too terribly specific about what it is going to be used for, I will guarantee you it will not be in 811. And, you know, I think from the standpoint of collecting the data mechanically, it is going to take, I would say, at least two cycles, two annual cycles, possibly more, before the agencies are in any shape to respond to a greater data collection.

You know, the Paperwork Reduction Act doesn't go away because we want a brand new set of data. We're going to have to justify its [INAUDIBLE], it's going to take [INAUDIBLE] to put this thing together.

I would say that our experience here probably tells us that there are not that many--even among the big R&D agencies--that are capable of putting this kind of data together.

It may take, OK, it's going to take them some time, probably at least two years, to get their data base in a form that their data is retrievable. It has taken us [INAUDIBLE] years to get the data for R&D in shape where we are satisfied, and even today there are errors in the data collection and misclassifications that go back [INAUDIBLE].

So this is, you know, I don't disagree with you, that is, in the report, the thing to do. I'm just telling you from the standpoint of mechanically within the agencies on an annual basis, that getting quality is going to take [INAUDIBLE].

DR. REYNOLDS: Mr. Williams, and then Mr. Kirschstein, and then I would like to move on. Mr. Williams.

DR. WILLIAMS: [INAUDIBLE] data collection [INAUDIBLE] that you should be strained by that.

DR. NOONAN: No, I'm not...

DR. WILLIAMS: The data...

DR. NOONAN: I'm just telling you not to raise your expectations so high.

DR. WILLIAMS: [INAUDIBLE], in spite of the expectation, it should be consistent with what the--it should be [INAUDIBLE]. In the next two years or three years, to develop optimal [INAUDIBLE], that's what you would like.

DR. REYNOLDS: Ms. Kirschstein.

DR. KIRSCHSTEIN: I would say all the more reason to start early, if it's going to take us several years [INAUDIBLE]. And what I think is really needed--not in this report, but in [INAUDIBLE] to put it together and to do it--are some specific [INAUDIBLE].

Nobody is asking the questions [INAUDIBLE] today, and so we have to know. What we know and who gets research grants, who is a scientist who gets research grants within, from the biggest agencies, NSF, DOE, NIH.

The only way you know that is if people self identify, and that is no way to collect good data. And so we have got to figure out a way to do it, and the way to do it is to tie it [INAUDIBLE], how the labor force is this marginal relation, and without all of this, this country will no longer--almost isn't now--be a leader in science.

And therefore, that has got to be discussed in the report, the competitiveness that we are losing and the leadership role we are losing in science.

DR. REYNOLDS: I will be glad to have two more responses on the data collection issue, and then I think we've got to move on.

Ms. Bishop and then Ms. [INAUDIBLE].

MS. BISHOP: The thing I wanted to add, I also submit that I'm not sure, I don't know where it should be in the report, but one of the problems with the government--and I am a

long-time worker--is that whenever we add on requirements for record keeping monitoring there, we never look, or we don't do it consistently or maybe haphazardly--maybe some do and some don't--but we never do it in the eye of dropping something into the bag, or modifying something that's already coming out.

For example, agencies are already being asked to send information to OMB or NSF or something, that this type of collection may be done at the same time if you only take a look at what you're asking and just by modifying the form, to collect...

DR. REYNOLDS: That's a good point.

MS. BISHOP: To collect, you know, up front. The thing that we're trying to do is not necessarily put more work on [INAUDIBLE]. I think what we're trying to do is also treat what's already out there to make it work more effectively.

DR. REYNOLDS: Yeah, that's...

MS. BISHOP: What I have, and you probably should say that in the report, because, you're right, somebody, some agency is going to look at this and say, oh my God, here is a $10 million operation and I don't have it in my budget, you know, etc., etc.

DR. REYNOLDS: What you are basically saying is there is an awful lot of data gathering going on, a lot of it is not presently coordinated.

MS. BISHOP: It's not coordinated, it may not even be germaine. All I'm saying is that, I think that if the agencies

are asked to do this by this commission, we need to take a look at what we already are doing and try to modify that.

DR. REYNOLDS: Yeah, I agree. Joe.

DR. DANEK: Yes, I would like to make two points. One is in reference to your comments about self identification doesn't work. I would disagree. It does work.

There are some problems with it. The National Science Foundation four years ago had no data on women, minorities, and disabled. We put in place a system of self identification in which the principal investigator identifies what they are, and doesn't say, "Are you a minority?" It says, "What are you? What is your background?"

We believe that we have pretty accurate data on this now, and it's taken us five years to clean it up. You are right, it takes a long period of time. That serves as the base of the thing.

I would argue very strongly that it would not use a group like [INAUDIBLE], but a group like OMB, because, in my view, it's the timing that's important. The data is there for the time that OMB is, that the meetings is requesting in its budget, and justifying its budget.

And that, to me, is the only kind. The [INAUDIBLE] level of the agencies get the accuracy of the data and the degree to which they care about putting in place an effective data base.

We have a system at NSF for collecting data from PIs

with regard to [INAUDIBLE]. It may not apply directly, but I think it's a start, and...

DR. KIRSCHSTEIN: I thought that Mary said that it was equally difficult what you were trying to do.

DR. DANEK: It was equally difficult when we started. [INAUDIBLE] But it isn't as difficult now.

MR. OAXACA: Joe, do you think a graphic that shows the feedback loop on how this data, that maybe we ought to have a graphic on this.

DR. REYNOLDS: I think that might discourage people, if they saw it.

DR. NOONAN: All I'm saying is that it seems to be that the system that we have devised for collecting R&D funding data has worked pretty well. And that is, we collect under 811 at the beginning of September and finally when the budget is completed.

NSF then proceeds to recollect that data, basically, in more detailed format later in the year, and that does two things. One, it gives us a lot of detailed information, because the agencies are not in the type of fine crunch that we put them under for the data. So the data, I think, is more accurate.

Secondly, we pick up discrepancies. We can try to explain them. And we can collect data by field.

So it seems to me that SRS is the keeper of the key, Science Resources Studies Division is the keeper of the keys.

We would have to look hard at how, maybe the current data collection effort could be modified to include the same data you collect.

I don't think we should rely only on 811, because it is just too time-constraining.

DR. DANEK: But I think the point that I would make also, a third point, is when I went and looked through this report, we in higher education had made a recommendation in a series which I thought I would comment on later, on data collection.

And I found data collection is one little item here. I think it ought to be much more [INAUDIBLE].

DR. REYNOLDS: Data, OK. Frank, did you have something you wanted to say? You're going to enlarge the data collection. And you're going to put a sentence in there that says, underlined, "All data are to be collected one month before each agency's budget is due." [laughter]

DR. DANEK: It's more than that. It's perfectly placed [INAUDIBLE].

DR. REYNOLDS: Joe, I was just joking. I'm just joking. [laughter]. Frank, we've gotta move up the data.

FRANK: Are you talking about a national commission or a federal agency collecting data? The reason [INAUDIBLE] national commision would be outside people involved.

DR. REYNOLDS: Yeah, I think we're doing both. I think we're talking--as I interpret this, what I think we're

saying is, of course, the only way one is going to get good data is that each federal agency must come up with its own good data, and then we are talking, as Mary has proposed, a central group to assimilate these data, the point being each federal agency is going to have to do it in a certain form, a certain format, so you get what you need, so that the central agency can deal with it.

I think Betty has got what we want to have in there. Don't you, Betty?

And, Mary, that's what you had in mind.

Joe, one more quickie and then we are going on.

DR. DANEK: We had proposed, from higher ed, the creation of a national commission, OK? What we had in mind, and I think that this may solve the problem, is something like the National Assessment of Educational Progress.

So in effect you could say that part of the role of this commission is the National Assessment of Federal and State [INAUDIBLE] Progress for improving the data collection.

DR. REYNOLDS: Yeah, I think that's true, but I think the overseeing group mind has a little more cosmic role than that title would indicated. Yeah, but I think we've got it.

Shirley.

DR. MALCOM: I just wanted to say that I think that we need to defer to Betty Vetter.

DR. REYNOLDS: I agree.

DR. MALCOM: With regard to the data, because, quite

frankly, she knows where good data are coming from and where bad data are coming from and where reasonable data are coming from, and that I would like to have her input on that...

DR. REYNOLDS: Done. I agree. OK, let us keep moving. I think that we have another report item here that I have been concerned about which is more in the report on actions for industry. I'll turn to Harriet Jenkins on that issue.

DR. JENKINS: What is coming on my own [INAUDIBLE] are a series of suggestions--I want to stress "suggestions." I, too, want to ditto comments that have been made earlier this morning, that the report is well made, and that it is almost poignant to [INAUDIBLE] the problems and issues we are trying to address.

However, when I look at some of the actions, they don't seem to pick up on the [INAUDIBLE], and so I was concerned about how to make those actions more specific.

Could I have that mike--I see some people [INAUDIBLE].

DR. REYNOLDS: Yeah, I think she needs that microphone there.

DR. JENKINS: So for those of you who did not hear me [INAUDIBLE].

I was simply saying that [INAUDIBLE] some of the actions a little bit more [INAUDIBLE].

And in part two, we proposed a national commission,

which in addition to [INAUDIBLE] at universities and colleges and heads of federal agencies, it included [INAUDIBLE] industry with this, [INAUDIBLE].

So, the first portion of this is [INAUDIBLE] that industry can carry out, and then it also makes additional suggestions that overlap with existing actions that [INAUDIBLE].

And we start with the one about industry. So I will not read it to you [INAUDIBLE].

DR. REYNOLDS: Do you want to react, Jaime? Have you had a chance to look this over?

MR. OAXACA: I think it's terrific.

DR. REYNOLDS: One--and, Frank, you've been involved in this program. I don't know if this made it into the draft, but under number six, "Teaching at Precollege and College Levels," we have found a real reservoir in people with--and I've forgotten to check on whether it specifically is in there.

In this nation, we have a work force, especially in technical fields, that is retiring earlier and earlier. The average retirement age has dropped down to 59, I think, meaning there are lots of productive years left.

Do we recommend that such people have a second career choice in the classroom?

FRANK: Yes.

DR. REYNOLDS: It's in there? OK. Good.

DR. JENKINS: It is not as specific and wasn't clear.

Somebody read one of the actions...

DR. REYNOLDS: Can you try to make that more specific?

DR. JENKINS: Right, and you also [INAUDIBLE] people who may be working full-time now that are put on loan. There are a number of industries that do that job very, very well, where they loan executives from IBM, for example [INAUDIBLE].

Some other people wondered what the board had been talking about--federal employees who are released but paid. In other words, they are on the federal tally, but they are allowed [INAUDIBLE] to teach, even in their immediate [INAUDIBLE].

DR. REYNOLDS: The federal government does that?

DR. JENKINS: Some, in some instances, yes, and [INAUDIBLE].

DR. REYNOLDS: OK.

DR. JENKINS: [INAUDIBLE].

DR. FINNEY: I have a question.

?: What was the question. There was something about unused pots of money, in the middle of page two. What is it talking about there.

DR. JENKINS: [INAUDIBLE].

?: Oh, good, I'd like to know about it, too.

DR. JENKINS: All right, let's go to the...

DR. FINNEY: I have a question about the industry.

DR. REYNOLDS: Yes, please.

DR. FINNEY: On number B, "Making a Bid to Take Over an Educationally Bankrupt School System or District"? Do you propose that private industry would do that?

DR. JENKINS: Yes. How about the federal government putting out a request for proposals after a state has done [INAUDIBLE] to improve the school system, or [INAUDIBLE]. Those looking at the urban problems in our nation, and we need to have [INAUDIBLE], options, or at least suggestions that people are taking and considering.

I believe Tom Kean, the Governor of New Jersey, has taken a look at significantly educationally bankrupt schools in his state, and he is looking at taking over approximately four of those and [INAUDIBLE].

It's one of the possibilities in inviting industry [INAUDIBLE], any firm in the U.S. who would like to take over a school district and let it [INAUDIBLE] on bargaining principles, on economic principles, and consider that [INAUDIBLE].

DR. NOONAN: Whoa, whoa, whoa, stop, stop, stop. Let me just say, it seems to me that that--we cannot put the federal government in the position of abrogating the state's responsibilities to run their school systems as they see fit.

If the state's want to take the role of doing this, it is not the federal government's problem to see that they do it, quote, "correctly," unquote, because there is no way--that's like people [INAUDIBLE], you know.

It seems to me that if governors [INAUDIBLE], governors of states want to take the initiative and get industry in their state or high institutes, institutions of higher education, or whatever, to cooperate and adopt these schools, or taking on supportive roles for schools, that's fine.

But the federal government should not do that, and in fact, I would argue to you that the extension of having, quote, having industry run a school district on, quote, "market principles," you would get no music, no art, no [INAUDIBLE], no history, no nothing.

What you will get is a business administration, science, and math, and I don't think that's what we're looking for.

DR. JENKINS: Norine, that's not necessarily so. Number two, federal help puts dollars for education in every single state in the nation. And if the federal government can't add power to that, then we are truly powerless.

But if you notice here, this is industry. All I'm suggesting, industry have the option to do these kinds of things. I've made five references to the power of the federal government. But that is not what's proposed right here in this action.

DR. NOONAN: Well, I mean, this--I will just tell you this, that, you know--and I think most of your suggestions here are quite good, in the sense that what they are are catalytic

types of activities that industry is capable of doing, and doing well, it seems to me.

But this particular one is very troubling. This number 8, all though, it was extremely troubling to me, both personally and from the standpoint of where the federal government's role is, and what industry's role is in education.

You know, I don't think we want to be in the position of advocating that industry create these centralized family commune learning centers. I just don't think we want to be in that position.

I will tell you what will happen, is that the report will be dismissed.

DR. JENKINS: I don't have any problem with your not accepting all of my suggestions. [laughter]

DR. REYNOLDS: That is a very...

DR. NOONAN: I, no, I think we have a very serious problem here, because we have to watch out for is that we don't get into the position where this report is dismissed as wacko, and I warn you, I have had thoughts of other people on this Task Force standing where I stand in the Executive Office of the President, I will tell you that we have to be extremely careful that we not be in the position of making this report totally unbelievable and totally unworkable from the stand--the people who are going to sell this report are not in this room.

The people that are going to sell this report are agency heads in the buildings around this town, and down at

1600 Pennsylvania Avenue, OK?, and up on Capitol Hill.

If they believe, the agency heads and the President and his staff and Congress believe that this report is either inconsequential--that's one danger--or overly intrusionist, in the sense that is way outside the role of the federal government to do this kind of stuff.

I will tell you the report will be dismissed and you will be nowhere, and that goes for the Congress as well.

DR. REYNOLDS: Could I just interject something here? Just kind of alluding to both of you, and I think we're all, I think all of us are meeting here as people who care deeply about schools and care deeply about the school situation.

On this particular issue, I found it extremely interesting a while back. California has just developed kind of a blueprint for the future, dealing with a variety of areas, involving all of the state's major CEOs, which are in a governor's economic development commission, and they were dealing with some of these issues.

And incidentally, most of these were in that report. The commission, though, spent most of its time on education, and I found it utterly fascinating and kind of rewarding, the people who had drafted the report had some innovative ideas and were supporting more industry intervention in the public schools, were supporting a voucher system and a whole bunch of things.

And the CEOs objected to it. My jaw dropped. They

very strongly supported the public school system. They supported the notion of lay governance. They were very eager to adopt a school and so forth, but they were not eager to take over a school. They were not eager to create a very far-reaching voucher system.

They wanted to be responsible, but they really very much wanted to do things to support the basic lay governance system of public schools and school boards, on which, frankly, the educational system was based and from which it has grown into, at its best, a very, very fine education system, with some real trouble spots.

So, I think if I might, to head off discussion on this one, and Dr. Jenkins has been very graceful about it, I think the majority of the items here are, we would all agree are dealing with public-private partnerships with the school are strong ones.

Some of them are covered in the report. Some of them perhaps we can heighten more, and I would suggest we move on, if you're comfortable with that, Harriet.

DR. JENKINS: Absolutely.

DR. REYNOLDS: OK.

DR. JENKINS: I want to stress again, suggested action items [INAUDIBLE]. I am just as sensitive to what appears to be acceptable to the majority of this group, as well as various groups in the nation. I will just call attention to number 9, that the intent there is to pick up on my old number

6 [INAUDIBLE], changing the attitude, the culture, and getting media deeply involved. That's what that is intended to do.

Moving on to the [INAUDIBLE] suggestions [Several voices].

DR. REYNOLDS: Yes, go ahead.

MS. JOSEPH: [INAUDIBLE] but I think that there needs to be some incentive built into that industry should, coming from [INAUDIBLE]...

DR. REYNOLDS: Which one are you referring to?

MS. JOSEPH: Only that industry should, the whole [INAUDIBLE]. There needs to be some sense of a federal partnership or federal role [INAUDIBLE] in terms of a presidential award or comment or congressional role or tax supports that industry does.

Somehow, to start "Industry should," from this group, there has to be a [INAUDIBLE], and I don't see why industry would focus on being interested in doing these things that support things they should do. Many different things that they do today, and they do a lot of that, is that there is some kind of handle to direct attention to increase the partnership or to [INAUDIBLE].

MR. OAXACA: But then California, when we originally came up with the concept of MESA, Bob Fennell and Professor Bill Summerton at Lawrence Hall of Science up at Cal Berkeley, the thing was put together with 17 CEOs from all the major corporations in California.

The incentive there was self interest. It was costing $62,000 to move somebody into the state and then they couldn't afford housing, so they, the companies had to pay the differential on their housing if they brought them in from some other place.

So the concept evolved that said we have to grow our own, from internal to the state, because if you look at the numbers in 1976, there were less than 50 Black/Hispanic graduates that graduated with a B.S., out of 68,000 students in the California State University school system.

And I think those numbers are pretty accurate. So the concept was formed and if you could have the matching situation of in-kind support from industry, the foundations--the two foundations that were pre-eminent in that particular endeavor in California was the Flora Hewlett Foundation and the Sloan Foundation, along with support from the state.

Where industry historically had been very averse to spending any money, given that they had the view that if they already paid taxes as a state requirement for industry in the state of California, that is changing now.

You are now seeing more and more participation by industry to set up learning centers, like at Cal Poly and San Luis Obispo.

You are having companies, like my company, like IBM, like Hewlett-Packard, TRW, the different companies are putting in CAD-CAM systems. They are sending people up for six months

at a time to train students in those disciplines that are required in industry, because you are not producing the kind of product that industry needs.

It would appear to me that that's the big incentive.

MS. JOSEPH: But I think you put your finger on it. Those state partnerships with industry--we have federal programs, and we have joint funding with industry.

The present programming, with prefreshman engineering program, started out with 100 percent government funding, now is over 50 percent [INAUDIBLE].

That's what I mean by the pool, the time. This, to me, if you don't have the partnership concept woven through here...

MR. OAXACA: Yeah, it's absolutely a national partnership.

MS. JOSEPH: And it doesn't have engineering and math all...

DR. REYNOLDS: I think you're just asking for some softened wording, so it's very clear that it's a partnership, and we're not just demanding something from industry.

MS. JOSEPH: "Thou shalt..."

DR. REYNOLDS: I think we've got the context.

DR. JENKINS: The original suggestions [INAUDIBLE] partnership.

DR. REYNOLDS: Ms. Bishop.

MS. BISHOP: [INAUDIBLE], and that is that the

report, as a whole, is beginning to sound [INAUDIBLE]. One of the things that [INAUDIBLE] is not being able to give the consequences to the American public--if you don't do this, what are the consequences?

And I don't think the American public feels that way yet, because I don't think they feel the consequences.

Specifically, this, your first paragraph, Harriet, talks about how to sound the alarm, and I think it's probably there that you can expand about the business about [INAUDIBLE], and the business here for industry to understand why it is critical for them to be concerned about the education.

And that is an overall program, [INAUDIBLE] said, we're not mad enough. We're not mad enough, because we need to strengthen the part [INAUDIBLE] about the consequences of not doing something there.

DR. REYNOLDS: I would struggle with that. And the initial draft did have more dire, doom-saying kinds of things, and I think both Mr. Oaxaca and I felt that you felt so whipped after you read it, and felt so hopeless, that you didn't have the strength to move ahead [laughter].

Now we could put at the end, "If you don't do all these things, the Lord will smite thee," or--just kind of conjured comment.

But the reason that this draft is the way it is, is quite consciously that it was my strong feeling, and I think Mr. Oaxaca and I both communicated through Sue, that we had to

get this draft in a little lighter feeling, that "Look, gang, we have a major problem because our work force needs all this help to do all these good things. Here are the things that should happen in order to achieve these things, that we have the collective strength and might to do this. Let's get moving."

It is my feeling that that is a better, more effective way to move than hammering at people.

MS. BISHOP: But I think what's happened. My feeling is that when I read this report this time, I got a better sense of what I was talking about than I did before, and perhaps it is just a matter of choice of words and how they are used, because I didn't feel this doom-saying feeling that you had before with the others. I didn't see it in there.

But in this report, in my opinion, in my reading of this, is much better in terms of consequences of saying that it is an industry problem. You talk about [INAUDIBLE].

DR. REYNOLDS: OK, Harriet, please be seated, anything else you want to call our attention there.

DR. JENKINS: [INAUDIBLE] respond to number one as your target group [INAUDIBLE], phase one, movement and peer status [INAUDIBLE].

DR. REYNOLDS: Yeah, we're interested in those pots of money [laughter]. Where are they?

MR. OAXACA: I'd go with hearsay over rumor any day.

DR. JENKINS: [INAUDIBLE], that there are some people

that feel that there are monies available, and [INAUDIBLE] with handicapped individuals, that go unused each year. I think [INAUDIBLE]. If you just wave that [INAUDIBLE].

MS. WINKLER: I don't know if you all know, that Patty Smith, who is the Deputy Assistant Secretary for the Department that deals with these programs, was in a car accident earlier this month, and I think, she should be coming out of the hospital anytime now. When she's back, I'll ask her about this.

I would be quite astonished to find that there were, that they were lapsing money at the end of the year or throwing it at something because you couldn't spend it. States are generally pretty strong and pretty good at applying for grants that are relevant to their needs...

DR. REYNOLDS: You know where it may be though, Nina, and I've been for an interesting--I used to deal a lot with the WIC program--Women, Infants, and Children--and I have learned that California isn't expending all of its WIC money because the regulations are so stringent that the, a lot of people actually don't qualify.

So some of these programs have gotten so tied up in red tape--no blame intended, that's happened to the WIC program--that a lot of states are sitting on WIC money they legally cannot spend.

And that may be part of that--you know, how those things happen, that monies are streamed towards people with

certain this or that and can't be moved.

MS. WINKLER: I would suggest that we not put in the draft [INAUDIBLE].

DR. JENKINS: You can check this out, that one of our responsibilities is to issue a field manual, and there are persons who are saying they don't have monies and other people are saying, [INAUDIBLE] go and apply for, by the appropriate organization.

DR. REYNOLDS: Yeah.

DR. JENKINS: [INAUDIBLE] If we could find out if somehow there is a [INAUDIBLE]. I assume you didn't have any problems with number two.

MS. WINKLER: [INAUDIBLE] I think there are [INAUDIBLE] various programs that [INAUDIBLE] probably as a general theme to be pursued by those kinds of programs, certainly worth looking into.

DR. JENKINS: [INAUDIBLE] report, but it does not combine teacher [side conversations interfering with recording] regarding standards for education.

The other issue [INAUDIBLE] specific in terms of using after-school centers, Saturday academies, summer school experiences to get a [INAUDIBLE] society, which would quantify some of our weaknesses and [INAUDIBLE] early in the game, when it comes [INAUDIBLE].

The number three is intrinsic to given science data. Many of us are [INAUDIBLE] minorities and women to respond

together, covering unique problems that might [INAUDIBLE].

And on number four, I am suggesting you consider, in addition to the [INAUDIBLE].

DR. REYNOLDS: Yes, Nina.

MS. WINKLER: I guess I have something on three and something on four.

School districts, in fact, do collect a lot of data on achievement. The Chapter I program has a fairly elaborate evaluation system call "Tiers," which does testing and so forth.

Now we have all read the newspapers and we know that our real problems with norm-[INAUDIBLE] tests and what's really above the national average--most kids seem to be. There are a lot of technical problems.

I don't know that just saying they need to disaggregate is in itself that much of an innovation, and I think they have all responded. They do, in fact, disaggregate, both at the top and the bottom level.

In fact, one of the questions we're having--I guess there are other testing questions, in that they haven't considered a test for the Chapter I program, which are all the disadvantaged kids.

The kids in the regular school program have other tests that they take. There is a question of coordination between the two areas and whether to take the same tests.

And then there is the overriding question of how good

the tests are and what, in fact, they measure.

I guess I don't know that that's something that in and of itself is a problem. I guess it's the results of the test and how well the kids are doing, is the real question.

That's just one comment.

Second...

DR. REYNOLDS: Could I just interject there because you are both correct on that, and I have wondered--the norms for those tests are out of date, and if you remember, every school system in the nation has been bragging that its children are above the national norm, like the old Garrison Keillor statement of Lake Woebegone, where all the women are strong, the men are handsome, and all the children are above average.

But what my question was--does anybody know?--is there any nationwide effort afoot to fix that?

MS. WINKLER: Yes.

DR. REYNOLDS: Because to me that's a very fundamental problem.

MS. WINKLER: A group of people...

DR. REYNOLDS: Are going to study this.

MS. WINKLER: In West Virginia, Dr. [INAUDIBLE], who I guess did the initial report that got all the publicity, and as a result of that the Assistant Secretary for Education Research Improvement pulled together a large group of people who include, including the test publishers as well as the users...

DR. REYNOLDS: So there is an effort to get a...

MS. WINKLER: Yes.

DR. REYNOLDS: OK.

MS. WINKLER: It's a living issue right now.

DR. REYNOLDS: All right.

MS. WINKLER: Although it has problems. On the other one, four years of math--I saw Shirley's hand up, too. She may want to say something. One of the big problems in math now is simply availability. I mean, the kind of step we would [INAUDIBLE] requiring it.

That's one concern I have is that it's even more important that the schools make it available. You can't even require it if you don't even offer it.

Other issues, when you get down to specifically requiring calculus as high school graduation--I personally never took calculus, so I don't know. My cousin sweated through it and he said it was pretty hard.

I don't know whether requiring calculus as a specific thing, rather than making it readily available, encouraging kids strongly to take it, might be a better strategy.

DR. REYNOLDS: Where we are in that, I think that's where we are in the report. Let's see now, I think the number is 38 and rising--38 states have strengthened their high school graduation requirements.

Virtually all of them have a three-year math requirement for graduation, science as a laboratory, kind of

similar to what we did in California, a lot of states have moved towards that.

I would hope, and I think that's what we do in the draft, is literally strengthen the state's hand, because I think that's the best way to move along in that direction, that we encourage, we praise those states who have strengthened their high school graduation requirements in math and science, and we hope that those states who have not done so will get moving, or they are going to have dumb children and not be aboard.

Isn't that what we're? [Inaudible comment from someone else] Yeah. OK.

DR. JENKINS: So, again, the point here [INAUDIBLE] of this last printing.

DR. REYNOLDS: Yeah.

DR. JENKINS: The issue is strengthening the hand of the [INAUDIBLE].

DR. REYNOLDS: Of the states, yeah. Herb.

MR. FERNANDEZ: I just wanted to point--there is a very important fallout of the four years of math [INAUDIBLE]. The fallout is [INAUDIBLE].

DR. REYNOLDS: Yeah, and that's--we've been seeing that happen. I think most states are at three years of math, which includes precalculus, if I remember it correctly. And if we can just get every child in the nation through precalculus, I would declare it a victory and go home.

Shirley.

DR. MALCOM: I want to make comments on number three and four. Number three, I think that--I am concerned, not as much about the data and the data disaggregation, as how the data are used.

And I think that the data should be tied to target intervention, and I think that this is not what's happening. The data are used to bemoan the facts and not to target, to fix what problems the data say exist.

On number four, I agree with the notion of four years of mathematics. I think that there should be continuous taking of mathematics like there is continuous taking of English.

The problem is, is how some of the schools have responded to that is to take algebra I and put it over three years, OK? And so, I think that you're going to have to have a specific course through which you want everyone to...

DR. REYNOLDS: Shirley, if I could interject, that is happening. The states have been coming together and defining what the courses consist of. When I referred to through pre-algebra [precalculus], that has a definite definition.

There is a whole effort out there of math teachers to define that. So I don't think we need to belabor that point. That is happening, and what we should do is strengthen the expectation that all the states get on that bandwagon. So the 12 that have not, or something like that.

DR. MALCOM: I think, though, that with regard to

calculus, that it should be the issue of calculus [INAUDIBLE], I agree.

DR. REYNOLDS: Yeah. Yes.

DR. NOONAN: I notice that although there is a requirement in the report for four years of mathematics, there is not a word about how much science is rational...

DR. REYNOLDS: Don't we recommend in the report that students take science? We don't? What do we say?

MS. KEMNITZER: We don't say anything about science. We just...

DR. REYNOLDS: Well, I strongly believe that our report should take note of the growing state school reform motion to have more math and science taken, that we applaud this, and we encourage all states to encourage the taking of three years of math, through precalculus, availability of calculus, and science with a laboratory.

So that should truly be in the report. And I didn't notice it wasn't in there--forgive me for my oversight.

MR. OAXACA: I think we should push for four and hope that everybody gets, you know.

DR. REYNOLDS: Well, I think we should just make sure everybody is getting three, and that there is calculus availability, because, once again, if we get--this afternoon, yeah--if we get too dictatorial and too hopeless, I would just like to applaud the school reform movement, those good math teachers that have been working on it, and strengthen their

hand, if we can do that.

OK, let's--we need to move a little more quickly.

DR. JENKINS: [INAUDIBLE]. I think that in a couple of places in the report, it suggests some sort of fellowship be provided, and just to double check [INAUDIBLE] looking at five percent of the high school [INAUDIBLE].

When we discussed that consideration, we stated that there is going to be a dearth of--the problem right now is the dearth of able teachers of math and science.

And we talked in one other place about public teachers improving their skills. I'm not sure it is clear in our report about increasing the pipeline of able and prepared teachers. And so the suggestion...

DR. REYNOLDS: There is a strong thing in there on teachers, preparation of teachers.

DR. JENKINS: Increasing the supply?

DR. REYNOLDS: Yes, ma'am.

DR. JENKINS: OK. So I would just trying to...

DR. REYNOLDS: Yeah, yeah, OK.

DR. JENKINS: OK.

DR. REYNOLDS: I think we've got that. Thank you very much.

DR. JENKINS: The university and college presidents--I want to make of comments [INAUDIBLE].

We made no mention of the agendas that should be established as one of the [INAUDIBLE].

And also the private institutions getting federal [INAUDIBLE] also should be asked to meet these suggestions for the national goal, and that's [INAUDIBLE].

DR. NOONAN: Wait, wait, wait, stop. I have a question about the universities. How do you view or how do you perceive that private institution will be held accountable?

Whenever I see the word accountable, I always wonder what that means.

DR. JENKINS: I am suggesting the federal government [INAUDIBLE].

DR. NOONAN: Keep talking. All those words [INAUDIBLE], but I still don't understand what it means.

DR. JENKINS: [INAUDIBLE--side conversation interfering].

DR. REYNOLDS: I should add that as a university chancellor, we are all out there very eager to do this. Sometimes probably some of us trying to do the right thing for the wrong reasons.

We are being beat up all over the place by not having enough minority and women faculty, and it's desperately hard.

What--Betty, how many women graduated with a doctorate in computer science last year? I think it was one.

DR. VETTER: [INAUDIBLE].

DR. REYNOLDS: It was just a trivial number. The number of minorities graduating with degrees--with Ph.D.s in science and chemistry was very, very small.

So we are all just on a huge campaign to try it with--my own university system needs 9,000 new faculty members, doctorate and prepared faculty, within the next 10 years. You know, we're hiring 1,000 a year, and just desperate to find more.

So, we are already in the--we are not just in the pews in church, we are in the choir. But we need help on all these other things to occur, so we can achieve what we need to achieve.

OK, I think we need to--anything else on this?

Dr. Rios.

DR. RIOS: [INAUDIBLE] respective industry participation [INAUDIBLE] more of this report, and [INAUDIBLE] I don't think it's appropriate to put a recommendation for industry, I would like to suggest that the goal we want on leadership that we consider making a specific recommendation with the President taking action, convene a panel of chief executive officers [INAUDIBLE], and try to [INAUDIBLE] the action items, the agenda for industry, let them, let the industry take action on its own priorities it sees as appropriate.

And that from that group, for example, the representatives from industry to serve on the commission be appointed, so that the federal representatives on the commission, for example, would be reporting to the agency heads.

And the industry representatives then could form the liaison with whatever action group the industry could form.

But I think that whatever [INAUDIBLE] the leadership, there should be a recommendation that the President take action to try to instill that partnership within the industry [INAUDIBLE].

DR. REYNOLDS: I think that's a good idea and there is some precedent for it. Three or four years ago the federal government wasn't selling enough savings bonds, so now there is a day where CEOs come to Washington and all convene on savings bonds.

And, good Lord, if they can do that once every year, surely they can come in and think about something this important.

DR. RIOS: If the President doesn't get the--or if the administration doesn't get the attention...

DR. REYNOLDS: No, I think that's a good suggestion.

DR. RIOS: [INAUDIBLE].

DR. REYNOLDS: And it is a simple recommendation, that the President convene appropriate CEOs to consider the recommendations of this report and how the nation's private leading industries can implement these recommendations, in order to meet their own work force needs, and in order to deal with this nation's needs. I think that's very good.

MR. OAXACA: Can you work with Frank and get that in there?

DR. REYNOLDS: Yeah. OK. Let's see. Joe, you have some suggestions on higher ed. Do they fit now?

DR. NOONAN: Did we dispose of the last two, Dr. Jenkins [INAUDIBLE]?

DR. REYNOLDS: I thought I did. OK. Joe, was there something you wanted to say?

DR. DANEK: I was going to go at the end of the--there is another.

DR. REYNOLDS: Yeah, I would like to get through the other one if we could. I'm working to try to get this poor hardworking group a break.

Alan Clive, you had a statement on racism, sexism and discrimination against people with disabilities.

Could we have a microphone for Alan [INAUDIBLE]?

Alan, can you come forward and we'll put you here with this microphone.

DR. CLIVE: This morning my horoscope said that I would receive a cool reception at the [INAUDIBLE].

[INAUDIBLE] to what's been going on, so I wanted to [INAUDIBLE] to say that--two concerns, one concern rather, of our group on social factors [INAUDIBLE] of the report, and that is the issue of science [INAUDIBLE].

We believe that it is very important to instigate a national campaign to deal with that lack, and [INAUDIBLE] what remains a concern is what I see as an insufficient emphasis on the larger social-cultural issues which our subcommittee was

established to examine.

And three statements made here today I wanted to comment on in that context.

First, Nina had said that whatever we were talking about ought to be directed toward the solution of the problem. I just wanted to remind the Task Force of just what the problem is that we are concerned with, and that is that throughout our country, many, many potential scientists and engineers are being discouraged from pursuing that path because of what they see as the larger prejudice against them in the society that makes it worthless to get involved in that kind of a venture.

And there are many, many [INAUDIBLE] women who may never even reach that path because a long time before that they will have concluded that girls who get involved in math don't get boys.

All of that had to be discussed a year ago, and it seems like a lot of [INAUDIBLE]. It still remains valid.

As for people with disabilities, of course, in regard to our group, it's a problem. Expectations are often very, very low.

So that is the problem. Jaime said this morning that we've got a problem, we have to fix it. And my response to that is, yes, we do have to fix it, but we've got to have some regard to these larger issues or our fixes won't work.

And Norine spoke very eloquently of the realistic view that we must take in order to make sure that our work is

deemed acceptable and worthy of implementation.

And in regard to that, I must respectfully say that I think in some way of representing the higher realism, that again, I want at least some recognition of the existence of these larger forces, that our efforts in the long run don't stand much chance.

It is the long run that I am thinking about. We hear some of the statistics about the appalling low numbers of women and minority Ph.D.s, and what we forget sometimes is how long has it been since graduate education for women has been around in this country? It must be at least a century.

How long has it been since the same for Blacks? That is the time of--the time scale that I am thinking, and what it tells me is that these forces are very powerful.

Like everybody else who spoke this morning, I, too, have got my little report here that--it's a retread, and a partial retread, at that. Which way do I start handing these out?

DR. REYNOLDS: I'll do it.

DR. CLIVE: Thank you. What I did was simply go back to the report that I handed out eight years ago in California, except I just provided the first page.

The first page is all the rhetoric--because Sue had asked me to come prepared with some sentences that could be thrown into the report. After going back and looking over what I had written, I thought that it still said what I felt needed

to be said.

But now we come to the implementation of that, and this I will [INAUDIBLE] and Gloria and I spent some time back there hashing this out this morning.

That I admit is a much more difficult prospect, and of course why shouldn't it be? Because I believe of all the charges, we got thrown the most difficult one.

One of the recommendations that, I think, could be made to dovetail into one with suggestions Harriet has made in her call for a five-year program of emphasis on science in education, science and math, is an effort to implement on [INAUDIBLE] a program like the one which I hope all of you received information on, entitled, "A World of Difference" program, which is sponsored by the national B'nai B'rith, which attempts on a city-by-city basis for one year to attempt to defeat racism and national origin stereotypes by introducing the community to its diversity and strength of that diversity.

We [INAUDIBLE] in terms of hard recommendations. Yes, I found it difficult, although one thing I might say is that climate remains very important.

It is fine that the media have a role, for instance, in trying to get all the weird [INAUDIBLE] off the television, but our political leadership still is vital, and it does have [INAUDIBLE] in terms of articulating the national goals of mutiracial, multicultural society in which there is mutual tolerance and mutual recognition of the strength and diversity.

A statement by the President, whoever it may be, in his inaugural address, concerning [INAUDIBLE] tension and wanting to do something for 200 million people. And certainly a repeated emphasis on this [INAUDIBLE] subject.

Beyond that, though, I assure you I would throw myself on the mercy of the courts and ask for assistance from this very talented group to come up with some implementable recommendations that recognize the nature of what we are up against, which is the long haul.

The programs that can be implemented now will continue to pay off year after year with the recognition that they must be kept working far into the future.

So I guess that is about what I have to say.

DR. REYNOLDS: Thank you very much, Alan. We have your draft in front of us. Down at the bottom, Alan, there is a sentence that begins, "Number one, there must be a recognition from our highest national...," and then...

DR. CLIVE: Right, I told you I just had the first page. I left all the recommendations off and just provided the rhetoric.

DR. REYNOLDS: All right, can you, you will give, perhaps me, for our drafters, all the recommendations, so we have all that. Good, thank you very much.

Any comments, here. Nina.

MS. WINKLER: I guess it is relevant to what Alan is talking about. I went through the pages in the draft on the

different ethnic groups and had one concern. That was that there is an opportunity, and I'm not sure we're taking it.

We have an example of one ethnic group, the Asian immigrants, who have done miracles in this country, and a lot of them have figured out somehow ways to overcome obstacles that we ought to use as an example.

Maybe there are some thoughts there that ought to be shared to solve some of the other problems.

The way the section on the Asians now is, well, they are doing really well, but there is going to be a problem soon, just wait and see.

And, in fact, I think the story of the Asians should be [INAUDIBLE], at least the immigrants. And we may not have the data to go beyond the immigrants, but we certainly know that the Asian immigrants have overcome massive racial prejudice, linguistic problems, poverty, hostility, and on and on and on, and overcome these problems, so many of them.

And in my own community of Arlington, you just see it year after year, school after school, there is an answer there that we have to somehow tease out and highlight, instead of trying to say, well, Asians are soon going to be as bad as everyone else, because it is inevitable in America that any minority is going to get [INAUDIBLE].

And I don't think we should be so negative. I think we should be positive and hopeful and look to that for a message.

There is just one other thought I had on those sections.

DR. REYNOLDS: Could I respond on that?

MS. WINKLER: Sure.

DR. REYNOLDS: I think, too, we should be very positive because of the just extraordinary effort it has required, and we see it so much, because we are currently the largest enrollers of Asian students.

We have Vietnamese, Cambodians, Samoans--just a huge variety of countries and languages.

However--and I do think we have to be accurate--the second generation of Asians, once they get born here and get exposed to MTV and all of the horrible things American culture has to offer, that academic success starts to diminish, and we see that in California.

So I think we have to be, just in the interests of acamedic honesty, we have to be a little bit careful on that. So I will take another look at that section myself.

MS. WINKLER: I still think that whatever the efforts have done, we ought to look at that. Let's bottle it and sell it, because it obviously works.

The other thing I wanted to say was, it's a small thing but I think it could be really intensive. And that is that it attributes the success of the Asians to their strong families and the failure of Hispanics to their strong families.

And you take the two pieces together, it says that it

is the families that--I have a quote here. "Hispanic. Strong family ties may discourage Hispanic youths from leaving home to attend college."

And then under the Asians, it says, "Immigrants, in terms of their desire to work, please their parents, honor their families, and achieve in school." And, um...

MS. KEMNITZER: The point is the families are different...

DR. REYNOLDS: That's the point. I think those are accurate statements.

MS. KEMNITZER: I'm not wedded to those particular words, but the point is that the families are different.

MS. WINKLER: [INAUDIBLE] of the personally, and I just think that there may be, there may be some problems that are going on. I don't think we ought to put ourselves in the position of cutting down strong families.

I think that's--in fact, if you look at, in the Hispanics, there are some things that, for example, low divorce rates, higher marriage rates, and so forth, that are great strengths on which we should build.

DR. REYNOLDS: Right.

MS. WINKLER: Rather than just kind of identify that group as having, that there is something wrong with having these strong families.

DR. REYNOLDS: I don't think that is intended. I think what is intended there is that it is utterly naive in

working with K through 12 to think one can be successful with children without involving their families and without having a good understanding of that culture and what one is trying to deal with.

Even the issue--and Betty help me on this--it's kind of depressing, but the data on IQ are very closely related to the numbers of children in a family.

The highest IQs belong to single children, families with single children. And when you get beyond three children, there is a serious diminution in IQ.

Everybody here who is one of a large family is going to attack me at the lunch hour, but those are the...

MS. WINKLER: That's generally because of poverty that you get...

DR. REYNOLDS: Nobody knows, nobody knows. If you hold those socioec--if you adjust those for socioeconomic levels, it is also true. So there are lots of interesting things out there that you just have to kind of deal with.

MS. WINKLER: If you want to deal with a situation where you are given a [INAUDIBLE] Hispanic families, I would limit their sizes. I mean...

DR. REYNOLDS: I'm not proposing--I didn't propose that.

MS. WINKLER: I know...

DR. REYNOLDS: What I'm just saying is that you have, I don't think we can leave out when we are dealing with ethnic

issues the important role of the family, and we want to be cognizant of it.

MS. WINKLER: Then let's deal with it, the positive role, and say, you gotta bring parents in, you gotta help parents. I think we say that somewhere in the draft.

DR. REYNOLDS: Yeah.

MS. WINKLER: I remember seeing that. And I would--that's great, parents ought to get all the help they can get. I'm sure they know that, too. But that's different from saying there is something wrong with all these different families.

DR. REYNOLDS: I don't think we say--did we say there is something wrong with all the families?

[Several inaudible comments]

DR. REYNOLDS: The Asian--OK, but we'll take another look at it.

Now I have an important housekeeping issue. It is now 11:35, and I can hear lunch-like sounds outside. Could I suggest this.

We've got a lot to do and we're going pretty good. Could we just continue through? You can stand another 25 minutes, and if anyone has to go to the rest room, if you raise your hand, I'll write you an excuse and you can go.

So let's just proceed ahead until lunch in order to...

?: Is it possible to turn the air a little down...

DR. REYNOLDS: I think it's freezing in here. Can

you check?

?: We have asked three times and they said they were going to try to [INAUDIBLE].

DR. REYNOLDS: Clyde, you're good at things like that. Go find who the building engineer is, and as a personal favor, ask him if he would turn the air conditioning down.

How about we open these doors--good thinking, good thinking.

Clyde, Clyde, we've just found an air conditioning adjustment.

Just so, I've left this until such a time your stomachs were starting to get empty and you would realize the importance of lunch, do not growl at us the messengers, but we're going to have to dun you all $15 for lunch and coffee today.

Is that correct? That goes to Sue Kemnitzer.

?: Cash or check?

MS. KEMNITZER: I'd prefer check.

DR. REYNOLDS: All right. Now let us keep going. We have Clive's statement and we're going to make an attempt to add more in the report on racism, sexism, and discrimination.

Via Jaime Oaxaca, Norbert Hill could not be with us today and was sorry about it. As you know, he has been a faithful attender.

I'm going to work with Norbert to add some more words on the American Indian situation, [illegible] could I charge you,

Frank, to call Norbert, and we'll--you and I and Norbert--will kind of figure that one out. That is a special interest of mine as well.

Joe, I have a note from you, and then Mr. Finney, I have a note from you. I'm going to go to him first on higher ed, and then what we are basically going to do is move on down into the discussion of style and format and I'll let you.

DR. FINNEY: You can do [INAUDIBLE] first.

DR. REYNOLDS: Well, you fit.

DR. FINNEY: Mine is on American Indians.

DR. REYNOLDS: Is it? Good, OK, let's go to Dr. Danek and then back to you. Joe, you had a couple comments on higher ed.

DR. DANEK: I apologize, I missed [INAUDIBLE] comments on higher ed by the 17th.

DR. REYNOLDS: That too much wind? Are we creating a cross draft? We are trying to imitate that poor plane in Hawaii and suck us out.

DR. DANEK: The basis for my comments is a March 10 memorandum to Sue from the Higher Education Task Force about recommendations for the [INAUDIBLE]. I will be glad to provide you copies of that, because my comments come from that.

And I would like to just kind of run these down and make a comparison as to whether or not the report covers the items that are listed in the memorandum.

I think, in general, the report does cover all of the

items. I have some concerns about a few of them which I would like to share with you, and I would welcome any comments from members of the Higher Education Subcommittee.

The first, the recommendation that we had made to Sue to set quantitative goals for higher education, I would comment that the current report does not have the [INAUDIBLE] of quantitative goals in higher education, and it would raise that issue as to whether or not we wanted to phrase it in somewhat of a quantitative aspects.

We also recommended that each state develop five contingent plans for change. That recommendation is in the report.

We did, however, recommend that the federal government should provide planning grants to help states and to serve as a catalyst, somewhat similar to what Shirley Malcom has suggested at the precollege level, that helps states get started in the effort of trying to identify what the problems are and what the issues are.

I still make that recommendation in the light of Norine Noonan's comments about directing states, because I think it can be done in a manner in which you don't tell states what to do, but in which you serve as a catalyst for change.

The second recommendation was that a national commission be set up. That recommendation is in the report and it's--and we're delighted with that.

The third recommendation was on greater evaluation of

existing federal programs. I'm not sure that that is in the report. [INAUDIBLE COMMENTS]. OK, but it's under federal [INAUDIBLE].

The MARK and MBRS are in there, but that's a rather limited program. I'd like to comment on that.

So I would like to ask that you look at whether the evaluation flavor appears in each area, because I think it's important, not only in MBRS, but in other areas.

I think Mary's comment about evaluation would take care of any concerns that we would have.

The data collection issue we talked about. That was a recommendation. That's fine.

The fifth recommendation of higher ed was to initiate a special science and engineering retention programs in higher education. Those are in there, but it appears to me that the action, that the action items that are proposed are not action items. They are statements, tenets or operating principles.

Under colleges and universities, it says that colleges and universities ought to recruit and graduate more students. To me, I think that needs to be more of a specific action, somewhere along Mary's lines.

The report does not seem to [INAUDIBLE] under the special programs, and it kind of captured the intensive care facility that we had incorporated in our recommendations. It doesn't seem to capture the need to treat the attitudes of people.

So I wouldn't say there is anything--I would say that I would look at it, rephrase it so that you get a greater feeling that science and engineering courses in the early years of college ought to be designed to capture students, not to heave them out.

The retention programs ought to have the philosophy of moving people through the pipeline, and I'm not sure that that's there at the present time, and I just ask that you look at the nature of the kind of example that we had and the kind of principles that we thought should be incorporated in a retention program, and try to get the flavor of that into the report.

I also think that when I look at the report that there is a loss of compatibility between what is stated under the colleges and universities and what is under the federal government.

For example, there is a statement about graduating and obtaining more students under colleges and universities, day cares and alliances, but the alliances under colleges and universities refers only to minority institutions.

It doesn't say anything about other groups.

Under the federal government intervention program, the statements are limited to minorities and do not include other groups.

It also limits the intervention programs to MBRS [INAUDIBLE] things, and it doesn't say anything about

university and college alliances.

So that's--if you take a look at those two and make some kind of adjustments and we can provide [INAUDIBLE].

I think Mary Clutter's comment about, is particularly appropriate here, about each agency taking a look at some of these intervention programs, if that's standard [INAUDIBLE] and incorporate some of the better ones of other agencies.

The sixth recommendation that we made was to increase incentives for majors in science and engineering. There is a recommendation there, under the federal government, to have a national scholars program, but as I read it, it says to bring people from a high school level to the baccalaureate level.

And our recommendation was much broader in scope and had other activities for graduate-level incentives and keeping people in the pipeline all the way to the Ph.D.

So that has to--if you look at that and you...

DR. REYNOLDS: Is our scholars program recommendation only baccalaureate?

?: No, the national scholars program is designed [INAUDIBLE] for different kinds of other [INAUDIBLE] for grad school.

DR. REYNOLDS: OK, for graduate schools, OK.

?: And it's quite confused, and I don't...

DR. DANEK: Yeah, they are confused in the text, but not specifically spelled out in the actions.

The other--and I think I'll have a look at that--the

other thing I would say is there are three action items under colleges and universities that are in the beginning, but then there are three recommendations in the text that are not in the summary.

Does that mean that they less support? Or does it mean that there is an oversight?

?: [INAUDIBLE] at the time it was done, we wanted to try [INAUDIBLE].

DR. DANEK: OK, but the result of that is to ignore...

DR. REYNOLDS: OK, Joe, OK, let's take a look. Why don't you just give us a summary and then they are listening, taking notes, and we will take a look and make some clarifications.

DR. DANEK: OK, that's the incentives. On the seventh item, more women and minorities in leadership positions, we recommended that and a number of specific recommendations. Those are there.

I think I would ask you to look more carefully at whether or not [INAUDIBLE] programs are specifically mentioned. They seem to be overlooked in the summary.

There is also missing--one of the things that we recommended was to take a look at, a more careful look and recommendation at broader-based programs such as WEOP look for more opportunities in science and engineering. That's Women's Equity Opportunity Program.

And as you begin to look at some of those general programs, the science and engineering [INAUDIBLE].

The eighth recommendation was to build science and technology alliances between institutions. That's shown the report limits to the minority group program.

And it's listed under--again the same problem that I had--it's listed under colleges and universities, but [INAUDIBLE] under federal government.

DR. REYNOLDS: Can you just give your comments to them.

DR. DANEK: I'm finished.

DR. REYNOLDS: Oh, OK, good.

DR. DANEK: The only other comment I would make is, and I would be glad to put this in writing. [INAUDIBLE]

DR. REYNOLDS: [INAUDIBLE] from this group today are overall items. We welcome specific comments such as you have just made and I am delighted to have them, and we have been wanting those and asking to get those to the group.

We don't have time, Joe, and I mean this with all respect and kindness, to go through editing comments on each part of it.

And I apologize if I have made you feel rushed, but that really is the issue. If there are--what we are trying to do today is to take two or three overreaching concerns--and I'm going to go around towards the end, and I want to hear from each person on that, and any specific comments you have, we've

been asking for in writing, because our editors need those, or otherwise we will never reach the final draft.

What I am really saying is a large group like this cannot do specific editing, but the group welcomes specific editing comments. They are eager to have them, but we are not able to go kind of piece by piece, and do a piece here, a piece there. They will happily respond to those in writing.

And I apologize if I have made you feel rushed, but that is the reason and I should have made it clear earlier.

DR. DANEK: Well, I am finished now.

DR. REYNOLDS: OK, please keep going.

DR. DANEK: I'm finished.

DR. REYNOLDS: Oh, OK.

DR. DANEK: I just have one other comment.

DR. REYNOLDS: OK.

DR. DANEK: I think that some of these concerns could be taken care of if we, the report had more information on some of the more exemplary programs that exist in the federal government.

I think there are a number of them. I think that the report only mentions MBRS and when asked that we identify a number or more of those, we categorize them, and possibly begin to construct what a model agency might look like, in terms of the kind of activity that might--pardon?

DR. REYNOLDS: Model agency response.

DR. DANEK: Model agency response. It is [INAUDIBLE]

issue, because if we put together all of these [INAUDIBLE] buzz words that we know exist, both outside and inside, and organize it in a kind of generic sense, I think we could come up with something very, that might be...

DR. REYNOLDS: Do you know more model programs?

DR. DANEK: Yes.

DR. REYNOLDS: Have you listed those for us yet?

DR. DANEK: I will be glad to do that.

DR. REYNOLDS: OK.

DR. DANEK: I mean I'm sure there is going to be some data on it. NASA has some things that they have to put in another report. I know that NSF does and DOE does also.

DR. REYNOLDS: OK, now we would welcome having those, and we talked and, Jaime, you had asked for this a bit in a slightly different fashion, of having some graphic material that indicated pipelines and so forth.

We had not talked about diagramming, and when you said that, I thought about diagramming a model program.

What do you think, Sue? Could we diagram an ideal model?

MS. KEMNITZER: I would caution that we have 15 different agencies that have much different missions and it's going to be a little tough to come up with generic responses that fit all, but we do have classes of agencies.

I mean, for example, NIH, NASA, some of the energy programs are quite similar in the way they are managed in

practice. It makes sense to have some generic models that would fit them.

MR. OAXACA: And then underneath say, here's the ones that apply to this generic model.

MS. KEMNITZER: Yes.

DR. REYNOLDS: Yes, Ms. Bishop.

MS. BISHOP: I've got two things. You may have talked about it earlier on, but you keep talking about a national commission.

In some comments that [INAUDIBLE], I guess it was at the Boston meeting, we went so far as to suggest composition, and this was [INAUDIBLE] talking about representation from area segments.

I think it's important, number one, whenever we talk about the national commission or however we call it, that we give an example of the type of representation--our committee talked in terms of [INAUDIBLE] federal.

But certainly, industry and academia, across the whole spectrum, and I think it's important to put that in up front.

I wanted to say that because he started mentioning about the national commission also.

The second thing is that one of the comments that I submitted talked about having as appendix some of the exemplary programs, and he's talking at the federal level, some of the ones that we have been hearing about around the country, that

we had suggested that might form it as an appendix, contact service, so that people who had no idea what to do or where to start could at least start with talking [INAUDIBLE] so you won't have to necessarily [INAUDIBLE].

Those comments I submitted, too. I don't know what happened to them, if anybody used them or not. But nevertheless we [INAUDIBLE] should be in the report.

DR. REYNOLDS: Could we ask you, Joe, working with our trusty writer group, to attempt to do a couple models on the model suggestions.

We had asked for exemplary programs, and some of them were added in the body of the report. For example, MESA program is in there, a couple of others.

Now, here we are a little bit in conflict. We have been hammering everybody to shorten this, because the first draft was way too long, to the point that we felt no one would read it, and so it has been markedly shortened into a terse thing.

If we add an appendix and put in model programs, we are getting much larger and much thicker again, and I have kind of a--as enthusiastic as I am about model programs, I would sure love to have--Jaime, hand me that booklet again you just handed me earlier.

A report just came out from the Western Interstate Commission, and in my view, frankly, is about the right size. You know, I will, I am capable of reading this, believe it or

not. I am probably not capable--I don't have, I've got stuff in my brief case.

But I get discouraged and won't even start something that is real thick, so I have some nervousness about.

MS. BISHOP: I agree with you on that. What we had in mind was just some small paragraph, not a whole synopsis, you know, and a lot of rhetoric on the program, but just something about the purpose, enough for someone to call or [INAUDIBLE], but not that everything would be explained in the document itself.

And this would be a couple of pages with paragraphs.

DR. REYNOLDS: Yeah, OK, we'll ponder that. We've got the nervousness of timing. Nina.

MS. WINKLER: I think this touches on kind of a major underlying theme that I want to talk about, and that is, what has this commission done--Task Force done--and what have we not done? Where have our resources and time gone? Will our report reflect that?

The main thing we have done in this Task Force is spend considerable resources of those devoted to the Task Force plus other people who have some experience around the country.

Some people I know put enormous amounts of their own time and effort in preparing the testimony that they delivered. They traveled long distances to do this.

And so that has been the center of our activity, and that's where most of our energy has gone into.

And here we are, spending almost all our time on recommendations which, quite frankly, are mostly cooked up in hotel rooms without any analysis behind them. And that's just, that's a lot of our problem with a lot of these recommendations is that they are costly, there is very little research done on potential implementations.

All of this staff work that you are supposed to do when you seriously make a policy proposal, especially if someone has a--one that has a multibillion dollar implication.

We're spending all our report on that kind of stuff when what we did here and our contribution to the state of the art has principally been this information, that we gained more and more and more--I don't know how many cities we've been to. I've seen America in the last year by doing it.

I think if we don't tell people what we learned from that process and what I learned from that process was that there are, there's tremendous richness out there of all kinds of programs run by all kinds of people at all different levels of resources and aimed at all different kinds of subgroups and populations.

A couple little bullets, it's going to basically ignore the work that we have done, and I think that is our main contribution. We've come up with millions of little policy proposals and we're just going to look like everybody else, and that's [INAUDIBLE] we have something that everybody else does not have, and we found out what was out there and we should

talk about it.

DR. REYNOLDS: Nina, I just, I know you're saying that lovingly and with all honesty, but I'm sitting here looking at the report, and the one thing that I thought when I read it for about the third or fourth time was that I, as I read it, specific faces and specific voices saying specific things came back into my mind.

I could see Ralph--the engineering people. We heard a lot of engineering people, that Jaime knows about engineering people. But they talked very pleadingly about the need to have more people in engineering and talked proudly of the programs they have.

I remember, I think it was Kansas City, the people talking about that elementary school program and pleading for early intervention.

The voices come back in my mind when I read these recommendations.

MS. WINKLER: We're not talking about what they're doing. I think that's what we learned. We heard what they had to say and I could go offer the ideas, [INAUDIBLE], walk through it and so forth, and...

DR. REYNOLDS: Of course, that's the next step. You remember--in fact, it kind of shocked me, we're going to talk about that later. Sue and I had a chance to meet on Friday. We are coming through here with recommendations based on what we heard and the, what I would call, not inconsiderable

expertise of this entire body that labors in this, I hope, fruitful vineyard day after day.

Then these recommendations go forth, and some of them, we hope, are self perpetuating. They create programs, they create some data efforts, they create some commitment.

And then there is a, I believe it is a full year monitoring function for the agency plans that follow through on this report.

So I think the notion of the staff work to follow through on these then becomes each agency's responsibility. Some agencies, for example, already have incorporated a lot of this--Health and Human Services, NSF come to mind.

But I think even our Health and Human Services and NSF representatives would say there is room for improvement in those agencies.

I think that there are some agencies that we have all agreed that we would like to see much more effort and commitment here or else they are not going to have a good work force in the years ahead, and they are going to be real targets.

I talked particularly here, and I don't think my good friend Stella would disagree with me, we have a lot to do with Department of Defense. We want to really get them enthusiastic about the, targeting more educational programs and more work force programs and so forth.

And I think that they are receptive to that. I think

there is a commitment and interest.

So I don't mean this as a defense. I don't mean it as an apology. I think I just mean it as a little bit of a different view, because I hear the voices when I read this report. Jaime and...

MR. OAXACA: I view that this committee has gone around the country and listened to some very sincere people talking about some very sincere programs that in the totality of the problem are bandaids.

I think we have to be realistic and recognize that the numbers are getting worse. And that's, that's--this Task Force is to tell the nation, we have a national problem.

We have listened to all sorts of people. you have, like Ann says, this wealth of talent, and I think we have to use that wealth of talent and then tie it in to what we in business call the gut feeling of what it is it takes, because you are never going to have perfect information.

It is paralysis by analysis if we do it the other way. It is a very straightforward problem. The demographics are increasing and the numbers are going down on the qualified people.

That is the problem that we have to address and it is no different than a silicon wafer where you only get one chip at the end. You have got to fix the process.

And there are limited things that are trying to be fixed, with MESA, with all the programs. But all you are doing

is really addressing the jewels that came out of high school.

What you have got to do is get orders of magnitude more people out of high school that are candidates that can, if they choose to, become science and technology folks, because they are prepared.

That would be my feeling.

DR. REYNOLDS: I had some hands up here. Tony Joseph, Ms. Bishop, Mr. Williams. Tony.

MS. JOSEPH: I just want to tell you about one thing. In the report [INAUDIBLE] more what Ms. Winkler said, [INAUDIBLE].

DR. REYNOLDS: MESA is in here, yeah.

MS. JOSEPH: I think that in listening to [INAUDIBLE] proof that there are some truly [INAUDIBLE] programs in every category [INAUDIBLE].

DR. REYNOLDS: We'll try to add more. I hear that from the group.

MS. JOSEPH: [INAUDIBLE].

DR. REYNOLDS: We'll try to add more topigraphically if you want. We are going to have to do it briefly, which I think everybody understands. Ms. Bishop.

MS. BISHOP: I think she pretty much said what I thought. I only heard, maybe Nina talked about it, [INAUDIBLE], which goes back to a suggestion that I made about commitments, just to say a few words on the programs we heard around the country. You might use a bandaid approach, but I

think the person in Boston who knows [INAUDIBLE] in California needs to know that...

DR. REYNOLDS: Well, the people in Boston really have never wanted and will never want to know what's going on in California [laughter]. Maybe the people in St. Louis care.

MS. BISHOP: [INAUDIBLE].

MR. OAXACA: That's only because they put the arch on one side of the river as opposed to this one.

DR. REYNOLDS: Mr. Williams.

DR. WILLIAMS: Two comments. I thought the suggestion Mary [INAUDIBLE].

DR. REYNOLDS: Yeah, maybe a separate...

DR. WILLIAMS: [INAUDIBLE].

DR. REYNOLDS: Yeah, you make an interesting point there. It may not be feasible, but having a booklet, and at least for a couple of years, a regular publication on exemplary programs is an awfully tempting idea, tempting for us to do, even if we can't do it here, because one--I'll be honest will all of you--one thing that always worries me, when you do just a little single list of exemplary programs, you get phone calls.

We did some exemplary programs in [INAUDIBLE] with--Clyde, do you remember what it was, that booklet that came out of [INAUDIBLE]?

Yeah, they were educational opportunity programs or something like that. And you get all kinds of calls from

people that say, well, those people don't even know what they are doing there in that booklet, and here is what we have been doing.

If there was some way that we could follow through, kind of like getting a star award for a few years with an exemplary program publication, which I think people actually doing this work would be very interested in.

It might really have a good effect. That's a good idea and I'll--we'll try to see if there would be some way to do that.

And then that might solve our program length report, and we could refer people to the exemplary program availability if they wanted to get it.

MS. BISHOP: If you wanted people to call the people who know about this program [INAUDIBLE].

DR. REYNOLDS: That's right, that's right.

MS. BISHOP: That's the kind I had in mind, contacts with those groups.

DR. REYNOLDS: You know, that's exactly it. And you need to--if you do exemplary programs, you ought to put enough about it and a name and a phone number and a location and good stuff.

So, OK, here is what I would like to suggest--yes, Mr. Williams.

DR. WILLIAMS: Having [INAUDIBLE] over the last several months--I'm not among the, that works in D.C., I'm a

field worker out in Florida. But I was very [INAUDIBLE] to see the bandaid report and [INAUDIBLE], CEOs would come, and there is nothing better.

What we have done is we have funneled all these exemplary programs out of [INAUDIBLE] and an appendix of these exemplary programs with a short who they are, what they do, who to contact, because let me tell you, when this things goes to captains of industry or school districts or an industry, whether it is the NASA director of [INAUDIBLE] center or something else, it will be nice to go and see what is working and what [INAUDIBLE] and it would be terrible for them to have to go find out all over.

If nothing else, let's put them all together in an appendix.

DR. REYNOLDS: Thank you. We're going to revisit this briefly.

MR. OAXACA: That's a topic, you know.

DR. REYNOLDS: Yeah, that's one of our topics.

DR. WILLIAMS: [INAUDIBLE] later on.

MR. OAXACA: Later on.

DR. REYNOLDS: And we kind of got preempted. I would like to suggest a break now and, Sue, what time do you want us to resume? How long is it going to take us to deal with lunch?

[LUNCH]

DR. FINNEY: First of all, I would like to say that I think the staff has done an outstanding job of bringing the

report into much formatted position, compared to what we saw in Boston [INAUDIBLE], and I think it's quite a job to pull together all this information and make it readable. And I found it very readable and enjoyable.

There are three other points I would like to raise. First of all, in the section dealing with American Indians, there was a comment there, and I'm not sure whether or not it's backed up by the facts or not. It may very well be.

It says...

DR. REYNOLDS: What page are you on?

DR. FINNEY: This is page 15a.

DR. REYNOLDS: Thanks a lot.

DR. FINNEY: This comment, "Indians, for the most part, do not want to be mainstreamed." And I know that Norbert Hill, I think, made a comment to that effect at the Boston hearing.

The only question is, is it true? That is, to the extent that the American Indians as a group subscribe to that philosophy, do we want to put it in our report in such a positive manner?

MR. OAXACA: We could say Norbert Hill says that.

DR. REYNOLDS: In Norbert's absence, I think you're right. I think that comment has to be modified. For example, interestingly enough, Oklahoma--before you all smile about Oklahoma has one of the largest college-going rates and success rates in achieving a baccalaureate degree of any state in the

nation. It ranks in the top three or something like that.

And a large percentage of the population in Oklahoma is Indian, and they are mainstreamed in Oklahoma because of a variety of things--the tribes had oil, the way they've economically used it.

So I think this is probably too blanket a statement.

DR. FINNEY: [INAUDIBLE].

DR. REYNOLDS: I'm noticing it and I think we need to fix that statement a bit, because I don't think we can categorically say that all Indians wish to be mainstreamed, because many, in point of fact, do not and have not been.

DR. FINNEY: OK, on page 8, I have the electronic type on it--I'm not sure whether or not it's on the top of your page or at the bottom of the page. But there is a comment to the effect that our national science and engineering work force will continue to erode and the prospects will fade for changing America back into the advanced industrial society.

Now I think I would like to see the wording modified. Somebody suggests that we may not be right there in the advanced industrial society, but I'm sure that we are and we're still leaders.

But I think the concern is if we continue on this trend that we would not be. I gave wording to the staff and they are shaking their heads, you see them, they understand it.

DR. REYNOLDS: Good point, good point.

DR. FINNEY: The only other comment I have is on

page 6, an action item related to each state's [INAUDIBLE] and it makes reference to all [INAUDIBLE] qualified high school graduates and underrepresented groups, scholarships, etc., etc., and we have to be ordered by any state institution.

And the question came to mind when we made state or state [INAUDIBLE].

Those were the only three points that I had.

DR. REYNOLDS: Frank, did you have some response there?

FRANK: Yeah, when you look at as a scholar incentive program and the [INAUDIBLE].

DR. REYNOLDS: Oh, that's the problem.

DR. FINNEY: OK, OK, fine. That's all I have.

DR. REYNOLDS: OK, in principle I agree with you, but when it's state dollars, many of them have--some don't--but most have restrictions for state institutions.

DR. FINNEY: OK.

DR. REYNOLDS: OK, thank you very much. Those are very helpful.

Now, next I would like to go to Jim Biaglow, who has been helping us with graphics. Jim. And, Jim, incidentally you have done a first-rate job.

MR. BIAGLOW: I will make this as quick and painless as possible. What I have done is summarize approximately 10 to 11 command view graphs, each view graph containing [INAUDIBLE] of fine sector view graphs, which contain [INAUDIBLE] which

will be spread throughout the report.

If everybody got the first page, you will see some idea of the quality and the type of the graphics that will be in the report itself. It has been confused a little bit by going through the Xerox, but the actual [INAUDIBLE], and I hope nobody is disappointed in it.

The only thing I would like to make a comment on briefly. Most of the graphs themselves are explanatory except for the fourth graph, and I would like to give some explanation to that.

So if people will turn to the fourth graph. Yes.

?: What page is it on?

MR. BIAGLOW: Page four. That's the one with the multiple [INAUDIBLE] graphs.

This needs a little bit of explanation because there is no system today that gives the demand that will occur in the future for college graduate students.

What I did, I took the data from NSF and I plotted the first graph on the left. The bachelor of science rate is the percent of 22-year-olds earning degrees in natural science and engineering.

And if you see which way it starts in 1959, at about 4 percent of the 22-year-old population, and goes up to the year 1986, even though it is not shown there, the last mark was 1986, had a rate of 5.4 percent of our 22-year-olds are going to college.

I then assume--made three assumptions. I assume this country had to maintain that 5.4 percent of 22-year-olds going to college, and I said what would be the shortfall in engineering over the next 20-some years if we kept that rate?

So if we stay at the highest rate we had in the last 20-some years, the figure in the right hand corner shows the shortfall. It doesn't look like much from that small figure, but believe that over that 22-year period, it amounts to 560,000 scientists that are not in the system.

If I assume that the rate falls back to 4.8 percent, a drop of 60 hundredths of a percent, the shortfall is shown in a little figure. It amounts to 1.1 million scientists and engineers that are lacking in this country.

And if [INAUDIBLE], that we fall back to a rate of 4.2 percent, it's almost disastrous--this is the rate which our country maintained approximately all through the seventies--you'll find that there are approximately 1.7 million engineers and scientists short, which is almost equal to half the current engineers we have in this country today.

MR. OAXACA: Did you--excuse me--did you factor in the historical--what would it be with the change in demographics and the track record that we currently have amongst the underrepresented?

What will that percentage be? If you go back to your first chart, it shows, you know, that projection will tell you what, that's the big, that's the big thing that's got to be

shown.

MR. BIAGLOW: And that is the most difficult one to do right now, and it is not factored into this. That's why there are the three main.

MR. OAXACA: You've got to [INAUDIBLE], though, against what the reality of, what they don't, if there is no fix to the current problem of improving the numbers that are here for American Indians at .15 and .3, and Blacks at 4, and Ph.D. level at 1.2, and Hispanics at 1.8.

DR. REYNOLDS: Oh, but, I think that's an inherent assumption, because the data he is working with include all that.

MR. BIAGLOW: It includes it all, yes. Not specifically looked at, but that's the area that...

DR. REYNOLDS: It's the current, this is the current rate.

MR. OAXACA: But I mean I'm talking when you project out in the out years, did you could take into account the fact that there would be less non-Hispanic white folk around.

DR. REYNOLDS: Yes, but that's from the current data.

MR. BIAGLOW: That's the current data, yes. That's from NSF.

?: If no change occurs?

DR. REYNOLDS: If no change occurs. This is what is going to happen if no change occurs. If people respond to the Task Force, it would be better.

This is based on the current low participation rates of Hispanics and Blacks.

?: [INAUDIBLE] but if the proportion of Hispanics and Blacks or even [INAUDIBLE] in the future, is this factored in?

DR. REYNOLDS: We can't do that, we can't predict that.

[Several voices speaking at once]

MR. OAXACA: Wait a minute, but you do have the right to say there is going to be more.

DR. REYNOLDS: No.

MR. OAXACA: Yeah, there is going to be more Mexicans, I guarantee you, because [laughter].

DR. REYNOLDS: But there are not going to be more lax.

MR. OAXACA: Betty.

DR. VETTER: The only trouble is you can't do it [INAUDIBLE]. What you could do [INAUDIBLE] future would be to use the K to 5 rate--that's the last one we have.

DR. REYNOLDS: That's the last predictive rate.

DR. VETTER: [INAUDIBLE] I can give you that, for just that one year's proportions. [INAUDIBLE]

MR. OAXACA: You are projecting out to the year 2020 and you are making yourself look too good.

DR. VETTER: Yes.

MR. OAXACA: And that's incorrect.

DR. VETTER: [INAUDIBLE].

MR. OAXACA: Even worse case here, it's better than it is going to be if you don't fix the.

DR. REYNOLDS: But as a statistician, and I was partly a biomedical statistician, I do not think it is defensible to hypothesize data on out--I need some help from you on this, too--hypothesize data on out, based upon an anticipated lower participation, or based on an anticipated lower birth rate.

All you can work from are what is your currently known birth rate and what is your currently known participation rate. In the field, that's the way it's done, and I wouldn't be a part of doing it any other way.

MR. OAXACA: But, you know...

?: Given that the worst case...

DR. REYNOLDS: That's not fair.

DR. KIRSCHSTEIN: What you can say is that this is the...

DR. REYNOLDS: Is the best case.

DR. KIRSCHSTEIN: [INAUDIBLE] given x, y, z [INAUDIBLE], it's bound to get worse.

DR. REYNOLDS: Exactly, that's right, that's right.

MR. OAXACA: We have to do pro formas in business every day of the week, and if I had to depend on statisticians to set up the PML for the following year, I would have gone broke a long time ago.

And I think it's absolutely mandatory that we make the statements with the particular caveats that define how making the assessment, and I got to project there that you are not going to fix the problem of getting more than 2 percent Hispanics graduating with B.S.s and 28 years later, you may not have...

DR. REYNOLDS: We all agree. That's what everybody says.

MR. OAXACA: But I think.

DR. REYNOLDS: That's right. This is bad. This assumes the problem is not fixed. These are terrible numbers. You heard what he said.

MR. OAXACA: But it's not fixed at 1985 numbers.

DR. REYNOLDS: That's what he said.

DR. NOONAN: He assumes that, he assumes it will get worse.

DR. REYNOLDS: Yeah, you didn't listen to Jim. How many is the shortfall, a million?

MR. BIAGLOW: In the worst case, it's 1.7 million.

DR. NOONAN: And that makes the assumption that your historic, that your participation rate today is nearly [INAUDIBLE] percent lower than it is right now.

DR. REYNOLDS: Yeah.

DR. NOONAN: You are, in fact, with the three graphs that we have here on the top right hand side of the stage, you are, in fact, assuming that the participation rate overall

decreases. You are not making any statement about where those declines occur, but you are saying that the overall participation rate goes down.

You know, this is the point [INAUDIBLE] problem. I mean it's the half full, half empty, and I would argue that, that I saw this, and it's the first time I really [INAUDIBLE].

One has to ask the question, why has the participation rate just in the last five years gone up, I wonder?

SEVERAL VOICES: Computer. Computer science.

MS. KEMNITZER: Yes.

MR. BIAGLOW: If it's not going down [INAUDIBLE]. The engineers and scientists are already [INAUDIBLE].

DR. REYNOLDS: They're dropping, they're dropping.

MR. BIAGLOW: [INAUDIBLE] about 4 percent. Yeah, they're dropping [INAUDIBLE].

MS. BISHOP: Need to explain that [INAUDIBLE].

DR. REYNOLDS: The '85 data show a further drop.

MR. BIAGLOW: That was up to '86, through '87 [INAUDIBLE].

MS. BISHOP: Is this going to be put in the report?

MR. OAXACA: Maybe--let me ask the question one more time, maybe I am not wording it correctly. What is the anticipated rate of participation for the population mix in the year 2020 expected to cause in the way of what the rate of national science and engineering B.S.s at the 22-year-old

level?

DR. REYNOLDS: That's in front of you.

MR. OAXACA: Taking into account the demographic projections.

DR. REYNOLDS: That's correct.

MR. OAXACA: That's what you did?

DR. REYNOLDS: That's correct, yes, it is.

?: This one?

DR. DANEK: No, I don't think so--if you factor in the current, the population of students is going from 53 percent minority to 73 percent minority, is that, those numbers?...

MR. BIAGLOW: All those factors were taken into account by Niles Boling. Those were the questions I asked him from NSF.

DR. DANEK: So is the copy that we're looking at, that the [INAUDIBLE] has incorporated the changing demographics? But it uses the same retention rates.

DR. REYNOLDS: Yeah, because you don't have any right to do anything else.

MR. BIAGLOW: There is no other way I can guess.

DR. REYNOLDS: And they are abysmal retention rates, and if you were to make them more abysmal, you would have no really.

?: Have a paragraph talking about that.

MR. OAXACA: I think you have to have a paragraph

that...

DR. REYNOLDS: You are going to have a paragraph talking about it. I mean, for example, poor Jim, he's done a really good job on this, he gave that this is a million short. There is going to be a paragraph saying this is a million too few. You are giving the verbal.

MR. BIAGLOW: Yes.

DR. VETTER: That's all you need.

DR. REYNOLDS: Yeah, you're going to have a paragraph, several paragraphs.

DR. VETTER: That's fine, that's all.

MR. OAXACA: You're going to double check on that, you know.

DR. REYNOLDS: I'm going to double check.

MR. OAXACA: My stomach tells me it's going to be worse than this.

[Several people speaking at once]

?: [INAUDIBLE] consider and anticipating their observations, and that is the increase in the last few years, and having information...

DR. NOONAN: We even, it's grown slightly in 1987, again. Projecting manpower is extremely difficult, as you know, and this does not take into account, what it doesn't take into account is over the next 20 years, which is really what we're talking about here, scientists and engineers are going to be..., OK? So, in fact, it's--you know, figures lie and liars

figure [INAUDIBLE], we do that all the time.

But I do think that we have to be careful as to how much negative conclusion you draw from these figures because it makes--and I've seen--I mean, NSF has generated these, you know, you can just look at the graph of 22-year-olds, and you keep the percentage entering science and engineering the same. You have the supposedly huge shortfall, assuming the same kind of use of science and engineering people today, in industry particularly, who use 7 percent.

DR. REYNOLDS: Which is an erroneous assumption that you can...

DR. NOONAN: Which, I think, is an erroneous assumption, but it is the only assumption we have.

DR. REYNOLDS: We can make, that's right.

DR. NOONAN: But again, I would just not even--caution is even too strong a word, just advise that we bring some level of cautious, in making kind of vastly negative statements and projections of how the shortfall.

MR. BIAGLOW: [INAUDIBLE] the second figure.

DR. NOONAN: No, I don't argue. I'm just saying that the statements that you make about the data have to be carefully [INAUDIBLE].

DR. REYNOLDS: And they have to be crafted such as, based on current productivity levels.

DR. NOONAN: Right.

DR. REYNOLDS: And current ethnic data, and

demographic projections based on current ethnic data.

DR. NOONAN: Yeah.

DR. REYNOLDS: We estimate that by the year 2000, there will be a million shortfall in engineering. It should, of course, be noted that certain fields may suffer this shortage more than others, things like that.

DR. NOONAN: And the only reason I say that is because I think what we...

DR. REYNOLDS: Betty, is that right?

DR. VETTER: Number one, you shouldn't call it a shortfall. What I would say, though, is [INAUDIBLE] if something happens, there most surely will be one point [INAUDIBLE].

DR. REYNOLDS: Yeah, and you're going to--OK.

DR. VETTER: [INAUDIBLE].

DR. REYNOLDS: Betty is going--Betty, you're going to write these captions to go with these data, right? OK.

DR. VETTER: I just don't want to be [INAUDIBLE].

?: Generated [INAUDIBLE] from the statistics.

DR. REYNOLDS: I would agree, I would agree. Now, I have a question.

Jim, I have a question on the first page, the lower left hand graph, I do not understand. It says, "Indian Women" and then "American Indian." Is that all American Indians?

MR. BIAGLOW: That is all American Indian and includes the American Indian women as well.

DR. REYNOLDS: Well, but it is not at all clear to me. Is this the total men and women?

MR. BIAGLOW: Yes, the total men and women.

DR. REYNOLDS: And then the women are broken out here?

MR. BIAGLOW: Yes.

DR. REYNOLDS: So they are counted twice, because the women are in the bar on the right?

MR. BIAGLOW: It just tells you what--yes.

[Several inaudible comments]

DR. REYNOLDS: Yeah, I think we need to clarify that by saying, "Total Asians."

MR. BIAGLOW: Yes, most of these [INAUDIBLE] haven't had a chance to put the editorial or the...

DR. REYNOLDS: Well, no, I think the whole block is going to have to say, "Total."

DR. NOONAN: The block should say "Total," "American Indian Total."

DR. REYNOLDS: "Total Indians," "Total Black," "Total."

DR. VETTER: Just put an S after the word "Indian" and you'll solve it.

MR. BIAGLOW: [INAUDIBLE] What was that?

DR. VETTER: Use the word "Indians" and then you don't have to write the word "Total." All you do is [INAUDIBLE].

DR. REYNOLDS: I would rather, I truly would, I would have understood this graph if it would have said "Total"...

DR. VETTER: [INAUDIBLE].

DR. REYNOLDS: Betty, I would have understood this graph if it had said "Total Asian" and then "Women." I don't understand it saying "Asians." It has got to say "Total Asians."

OK. Other questions on the graph.

MR. OAXACA: I wanted to make sure that there was a message--these are known in the trade as horse charts. It is a picture of a horse and it says "Horse." It should say, "Citation one in 1967," you know.

MS. KEMNITZER: Yes, yes, we'll do that.

MR. OAXACA: It has to be a message.

DR. REYNOLDS: OK.

MR. BIAGLOW: The first three pages of this lead up to that fourth page, which caused a lot of comment. The fifth page is nothing but a rehash of the fourth page, in case anybody wants a better view of how the shortfall is broken down...

DR. REYNOLDS: Jim, Jim.

MS. KEMNITZER: Wait a minute, Jim, please, I would like to raise a question.

DR. REYNOLDS: I think this is unnecessary complicated, with a 4.2 rate, a 4.8 rate, a 5.4 rate. Can we just pick one? Because people aren't going to decide between

those.

?: Pick two [INAUDIBLE].

DR. REYNOLDS: Pick out two? Do you want to do the 4.2 and the 5.4?

MR. BIAGLOW: That will give you the extremes.

DR. NOONAN: What was the basis for choosing 4.8?

MR. BIAGLOW: Because that was the rate four years ago and it is halfway in between what it was in the seventies and what it is now.

DR. VETTER: [INAUDIBLE] We already know what's going to be for the next four years and [INAUDIBLE]. We already know...

DR. REYNOLDS: Well, Betty, what should we do? I just--if I were sitting here trying to puzzle out three different rates, I think, well, why are they burdening--you know, there is such a--4.2, 4.8, 5.4.

DR. VETTER: OK, those are the numbers [INAUDIBLE], "Rate of 1970s," "Rate of 1986," [INAUDIBLE].

DR. REYNOLDS: All right, OK, do that then.

MS. KEMNITZER: OK.

DR. VETTER: It shows what this is.

DR. REYNOLDS: OK, that's better.

DR. VETTER: But we already know what's [INAUDIBLE].

DR. REYNOLDS: "1970 Rate," "1980 Rate," OK. OK, keep--everybody keep looking at these with a critical eye, because fresh, inexperienced eyes will look at these, and if

they are confusing to us.

MR. BIAGLOW: The next graph, page 6, are class of pipeline of scientists and engineers from high school through college.

We originally had monitored them all the way through graduate school, but the data and figures got so small that--if you notice in the report that you received several weeks ago, you could not determine any of the numbers or any of the figures whatsoever.

So it was broken down up to the college grad level with approximately 200,000 graduating from college.

And what we did this time is take some of the more recent data, Betty Vetter's last report, the April issue of Manpower, and we showed the breakdown of graduate students in engineering by race this time.

And one of the most significant factors is the foreign graduate students, particularly in engineering, occupying almost 44.2 percent of all...

DR. KIRSCHSTEIN: These are foreign nationals.

MR. BIAGLOW: Yes.

?: I think that should be put in there.

MR. BIAGLOW: Yes, is this to date? This is to date.

DR. VETTER: One a temporary visa...

?: Well, I think that should be put in there.

DR. VETTER: Otherwise, [INAUDIBLE].

MR. OAXACA: Is there a 1988 figure?

MR. BIAGLOW: Yes.

MR. OAXACA: OK, because...

DR. REYNOLDS: Foreign nationals, people who do not have...

DR. VETTER: [INAUDIBLE] on temporary visas.

DR. REYNOLDS: Would it be too blatant if we just said, "No Green Cards"? [laughter]

MR. OAXACA: There is no such thing as no green card anymore now with amnesty.

I might point out that there is two bumper stickers that we should all remember on statisticians. One is that "Statisticians are Standard Deviates," [laughter] and number two is "Statisticians are Mean Lovers." [laughter]

MR. BIAGLOW: The "Other" group probably should be changed to "Unspecified."

DR. REYNOLDS: OK.

MR. BIAGLOW: Because I had to put that number in there to make it add to 100 percent.

DR. REYNOLDS: Good point. OK, keep going, these are very good.

MR. BIAGLOW: If you will turn to the next page, [INAUDIBLE] relates to the overall problem, both with our educational system and our competition with foreign nations.

[INAUDIBLE] figures show our SAT math averages and SAT verbal averages by ethnic group, and it's 1987 figures, and it shows Blacks, Puerto Ricans, Mexican Americans, and American

Indians, other Hispanics, are all below women in both these math averages and in the verbal as well.

And the [INAUDIBLE] show our competition against foreign nations--U.S. trails as far as 12th grade scores in the International Math Achievement Test. As far as geometry, algebra, and actually calculus should be probably elementary functions and calculus, rather than just calculus itself.

DR. REYNOLDS: Isn't it interesting that Hungary is so low in everything. We and Hungary are paired.

MR. OAXACA: That's why they changed the head men.

MR. BIAGLOW: So that, in essence, shows our position with the minorities having the poorest SAT scores and in turn, the United States as a whole having the worst geometry, algebra, and calculus scores [INAUDIBLE].

MR. OAXACA: The message is going to say [INAUDIBLE].

MR. BIAGLOW: The appropriate message will reflect that as well. The only problem with the bottom three charts is if anybody knows of more recent data--this data is from 1982, the stuff on the bottom. If you have more recent data, I would...

DR. VETTER: [INAUDIBLE].

MR. BIAGLOW: What is that, every five years or what?

?: We just did it.

MS. KEMNITZER: We'll get you the latest...

[AS A RESULT OF TECHNICAL PROBLEMS, APPROXIMATELY THE LAST 15 MINUTES OF THIS MEETING WERE LOST.]